Public Health Reports

Vol. 55 • OCTOBER 18, 1940 • *No. 42*

THE HOUSING PROBLEM AS IT AFFECTS PUBLIC HEALTH NURSING ACTIVITIES

By MARY J. DUNN, *Public Health Nursing Consultant, United States Public Health Service*

To the extent to which there exists a housing problem in any community, be it urban or rural, to that extent do we find other grave and allied social, economic, and health problems, including particularly poor nutrition and inadequate medical and nursing care.

In other words, wherever there is poor housing we find not one, but multiple problems, all of which must be dealt with if we are to safeguard the health of the people and bring about community betterment; and this not as a charity but as the birthright of everyone in our democracy. The oft-repeated statement that "a third of our population lives in structures unfit for human habitation" must be accepted as a basic condition and regarded as a vital social challenge.

A great deal has been written and many facts and figures are available showing the extent of the relationship between housing and health, and as good citizens and as effective public health workers it is incumbent upon us to be thoroughly familiar with this information. All such reports conclude that those living under adverse housing conditions are subject to much ill health, and are handicapped by all the concomitants of low income.

It is also pointed out that while illness and death in slum areas cannot be attributed solely to housing conditions, there seems real justification for active participation of health authorities in the housing field.

Furthermore, it is the problem of housing poor people which to public health departments, and to others interested, is the most important of all; because without an attempt to better the situation of the lowest income group, there will be no permanent, substantial public health improvement.

Granted, then, that the housing problem is a concern of health authorities, it is the purpose of the writer to portray the role of the public health nurse in the program for better housing. As I see it, our major responsibilities, as nurses, are fourfold:

259728°—40——1

1. To have a working knowledge of the essentials of a healthful home environment.

2. To know the evils and handicaps of poor housing, particularly as they affect public health nursing performance.

3. To be informed regarding present-day programs and plans, Federal, State, and local, for better housing. To know particularly what our own organization is contributing.

4. To exert every influence to bring about improved housing conditions, to reduce overcrowding, and to encourage homemakers to maintain their homes and premises in a sanitary manner.

Let us now elaborate a bit more fully on the foregoing functions.

1. *To have a working knowledge of a healthful home environment.*—The essentials of such an environment should suggest:

A pure and sufficient water supply.
A safe milk and food supply.
Sanitary refuse and sewage disposal.
Sufficient ventilation, heat, and light.
Space enough for ordinary family demands.
Absence of excessive dampness.
Screening against flies and mosquitoes.
Protection against other insects and rodents.
Protection against fire hazards and other accident risks.
Adequate play space and sunshine for children.

Furthermore, a healthful environment must not be interpreted merely as one affording freedom from disease and the prevention of premature death, but should be associated with comfort, decency, convenience, and even joy in the daily routine. It is then that housing takes on far-reaching public health significance.

Relative to an elaboration of the basic principles of healthful housing, it is urged that we familiarize ourselves with the report on this subject of the Committee on the Hygiene of Housing of the American Public Health Association, which was published in preliminary form in the American Journal of Public Health for March 1938, page 351, and which has since been issued in revised pamphlet form.

2. *To know the evils and handicaps of poor housing, particularly as they affect public health nursing performance.*—When we speak of housing evils, it is with the realization of their existence not only in congested cities but on cotton plantations and in the mountains, in mining communities, in mill towns, and in farming regions, wherever people have congregated. What, then, are some of the major health hazards of bad housing? These evils seem to group themselves under the following categories:

(*a*) Lack of sanitation: Disease is spread all too frequently by such inadequate sanitary facilities as contaminated water supplies from wells, water polluted by improper plumbing, and insanitary toilets.

Likewise, the accumulation of refuse and water encourages the spread of insect-borne diseases, including malaria, in many regions.

(*b*) Lack of light and sunshine: Lack of sunlight encourages the survival of disease germs and lessens human resistance to certain diseases. It is one of the chief causes of rickets in children. With relation to the patient with advanced tuberculosis, the danger of infecting other members of the household is increased greatly if there are dark or badly lighted rooms, since the bacilli sprayed about by the coughing of the patient live, and consequently remain dangerous, much longer in darkened areas.

Lack of light and undue glare must be considered also with relation to eyestrain and accompanying eye defects.

(*c*) Overcrowding: Overcrowding, as pointed out in various studies, is a vital factor in the relation between housing and health. The more closely people are crowded together in their homes, and more particularly in bedrooms and beds, the greater the danger of spreading infection throughout the family. This applies particularly to such diseases as the common cold, sore throat, bronchitis, influenza, diphtheria, scarlet fever, measles, mumps, chickenpox, whooping cough, pneumonia, and tuberculosis. In addition to the foregoing, overcrowding, with little or no opportunity for privacy or comfort, increases family friction and nervous tensions with consequent ill results which cannot always be measured.

(*d*) Lack of screening: Absence of suitable screening is also accountable many times for the spread of disease, especially the insect-borne type.

(*e*) Lack of facilities for keeping milk and food from decomposition: Foods not properly cared for may propagate various bacteria which cause food poisoning.

(*f*) Poor construction and dilapidation: Poorly constructed, ramshackle buildings introduce all the hazards associated with accident, especially fire and accidental falls.

What effect may the foregoing hazards have upon our public health nursing performance? Surely, there is not a nurse, and more particularly a public health nurse, who could not cite example after example of ineffectiveness of her nursing performance because of extremely poor housing conditions and the accompanying problems, encountered in all too many of the homes visited daily in line of duty. While such adverse conditions are challenging, and they serve to test one's ability and ingenuity as a nurse and teacher, they interfere with proper and effective professional functioning and it must be recognized that certain accomplishments will never be attained until the people of every State in the Nation are afforded at least minimal standards for decent living. For example:

1. How can the nurse be practical in her instruction regarding isolation technique when several people, in addition to the patient, are occupying but one room?

2. What can she teach regarding the disposal of excreta when the premises are devoid of any semblance of a sanitary unit?

3. How effective can she make her teaching regarding the care of milk and other perishable food when there are no facilities for refrigeration?

4. What can she teach regarding sight conservation when the house is devoid of windows or adequate means of artificial lighting?

The foregoing, as well as other innumerable and comparable problems which might be cited, confront us daily, and I am confident that there is no one who would not agree that public health nursing, to be really effective, must have as its foundation decent standards of living. Otherwise, much of our time and energy will continue to be of little or no avail.

3. *To be intelligently informed regarding present-day programs for better housing.*—Other countries, including England, Austria, Holland, and Sweden, have long been active in developing adequate housing. Although housing for many years has also been a Nation-wide problem in the United States, we have only lately, as a Nation, begun to take remedial steps regarding it. Let us review briefly some of the developments in national housing programs of the past decade:

1. In 1931, President Hoover called a "President's Conference on Home Building and Home Ownership" in order to stimulate the building of new homes, and by so doing to provide work for the unemployed and more satisfactory housing facilities for the people in the low economic groups.

2. During the present administration the problem of housing has been attacked with increased vigor and for the same reasons.

(*a*) The Housing Division of the Public Works Administration began a program of replacing slum areas with low-rent housing of quality and decency.

(*b*) The Farm Security Administration has dealt with the development of rural communities beyond metropolitan limits, and with rehabilitation, including housing, of individual farmsteads.

(*c*) The Federal Home Loan Bank Board provides a central mortgage credit reserve, and through the Home Owners' Loan Corporation refinances existing mortgages of distressed home owners and makes reconditioning loans.

(*d*) The Federal Housing Administration has stimulated private institutions to make loans for the construction of new houses and modernization and repair of existing homes through partial insurance against losses.

(*e*) The United States Housing Authority makes loans and annual contributions to local housing authorities for slum clearance and housing of families of low income.

In addition to the foregoing national endeavors, innumerable State and local housing activities might also be mentioned. Reference has already been made to the American Public Health Association Committee on the Hygiene of Housing under the leadership of Dr. C.-E. A. Winslow.

Despite the method of attack, all are working toward the end that each family in the community may be housed in a dwelling that affords protection against the weather, adequate facilities for sanitation, safety, and for the general well-being (physical and psychological) of the individual members; a home that can be rented or purchased for a sum that will leave sufficient funds for food, clothing, and other essentials; a home located in a neighborhood that is free from influences that tend to undermine character and moral values.

That we, as public health nurses, should keep informed regarding these and similar movements for community and individual betterment, would appear not only highly desirable but wholly essential if we, as good citizens and effective public health workers, are to fulfill the fourth major responsibility set forth at the beginning of this paper.

4. *To exert every influence in bringing about better housing conditions, to reduce overcrowding, and to encourage homemakers to maintain their homes and premises in a sanitary condition.*—What are some of the concrete means that may serve in the attainment of this objective?

(*a*) Careful recording of all the pertinent facts on substandard conditions of environmental sanitation and housing, omitting no item relative to these factors on the individual and family record form.

(*b*) Reporting to other divisions of the health department, or other city departments concerned, gross evidences of poor sanitation, so that compulsory steps, if necessary, may be taken to improve the conditions.

(*c*) Establishing liaison relationships with local housing and welfare authorities to provide the housing authority with information regarding substandard physical housing conditions and to secure from welfare authorities assistance in ameliorating the substandard living conditions of the families with which the nurse is working.

(*d*) Instructing, when indicated, all families in ways and means of improving the sanitation of the home and its surroundings, and interpreting to the families the significance, from a health point of view, of maintaining the sanitary levels of the home.

(*e*) Advising the family in ways and means of minimizing the adverse effects of overcrowding.

(*f*) Securing assistance from social-welfare groups to instruct families in the techniques of good housekeeping practices. Such facilities as the Work Projects Administration housekeeping-aide projects, or other organized services, might be enlisted.

(*g*) Including in group and other teaching programs subjects which are designed to make the community, as well as each individual family, more "housing conscious."

(*h*) Increasing the emphasis in organized nursing circles on the necessity to think in terms of better housing and sanitation, not for any particular groups or areas, but for all groups and all areas, realizing that there are slum conditions in the country as well as in the city.

By observing the foregoing, a statement made by a State sanitation consultant to the effect that "a nurse can do more, perhaps, than anyone else to further sanitation in the home," should become a truism. This is a big order, but nurses have been given big orders before and have not been found wanting.

In conclusion, let us be reminded that as other social needs have brought about social action, so will this great need, the need for better housing, be met. And, in its accomplishment may our profession of nursing stand ready, as it always has in the past, to make its own unique contributions in ways already known to us, in the fulfillment of better housing facilities and improved standards of living for the people of our community, our State, and our Nation.

REFERENCES

Britten, Rollo: The relation between housing and health. Pub. Health Rep., **44:** 1301 (Nov. 2, 1934). Reprint No. 1656.

Graves, L. M., and Fletcher, A. H.: Problems of a housing-enforcement program. Am. J. Pub. Health, **28:** 695 (June 1938).

Basic Principles of Healthful Housing. Committee on the Hygiene of Housing. American Public Health Association. 2nd ed., May 1939.

The hygiene of housing (a symposium). The Commonhealth, Massachusetts Department of Public Health, **25:** 95–184 (April–June 1938).

Wilson, M. L.: Rural housing. J. Home Economics, **31:** 28 (January 1939).

Britten, Rollo H., Brown, J. E., and Altman, Isadore: Certain characteristics of urban housing and their relation to illness and accidents: Summary of findings of the National Health Survey. Milbank Memorial Fund Quarterly, **18:** 91–113 (April 1940).

SANITARY AND PHYSIOLOGICAL ASPECTS OF FLOORING MATERIALS

By JOSEPH M. DALLAVALLE, *Passed Assistant Sanitary Engineer, National Institute of Health, United States Public Health Service*

In the light of our present knowledge, it is not possible to relate health to the kind of floor construction used in our homes. Some indirect evidence has been published, but it is questionable whether

such evidence can be considered specific or conclusive. Whenever an attempt is made to relate the elements of housing to health, it is found that the variables involved are so numerous and complex as to impede rational analysis. The aggregate of many coexisting factors may influence health, but it is doubtful whether any dominating influence can be attributed to one single item, as for example floors.

While it is difficult to relate flooring construction to health, there are certain sanitary and physiological implications which can be evaluated in terms of known physical properties of floor coverings. Thus, dustiness is associated with rate of wear or disintegration; fatigue may be measured in terms of resiliency; coldness by means of heat transmission coefficients; and noise in terms of acoustical properties. Table 1 lists these four items and their related indices.

TABLE 1.—*Physical measurements or indices related to certain sanitary and physiological aspects of flooring materials*

Sanitary or physiological item	Related measure or index	Units of measurement
Dustiness	Wear	Wear in inches made by accelerated test.
Fatigue	Resiliency	Initial indentation (30 seconds after application of load) in inches made by 25-pound load on a flat-ended rod ¼-inch in diameter.
Coldness	Heat transmission	B. T. U. per square foot of floor per hour.
Noise	Acoustical transmission	Transmission loss in decibels for sample floor panel.

The physical properties of flooring materials have been published and are readily available. However, so far as can be determined, no comprehensive treatment of these properties in terms of desirability from a sanitary or physiological point of view has ever been undertaken.

DUSTINESS

There is no evidence that floors constructed in accordance with the best accepted technique disintegrate sufficiently to be insanitary or troublesome. Emley and Hofer (*1*) have studied the relative wearing properties of industrial-type floor coverings used in post offices. The values of wear for different floor materials as obtained by these investigators are given in table 2.

The testing equipment used by Emley and Hofer consisted of two post-office trucks arranged in tandem, one loaded to 1,500 pounds and the other to 1,000 pounds. The floor material to be tested was placed on a circular track 40 feet in diameter. Both trucks were driven about the track at a speed of 2 miles per hour for 60,000 circuits. Dust and fragments were removed daily.

The results of these studies indicate that rubber tile and linoleum are most resistant to wear. Maple strips and blocks are next in order, followed by concrete (excepting concrete surfaced with 1:3 mortar).

End-grain southern yellow pine and end-grain Douglas fir appear to have poorer wearing properties than the materials mentioned.

TABLE 2.—*Wear of various flooring materials after 60,000 truck cycles*

Material	Wear (thirty-seconds of an inch)	Material	Wear (thirty-seconds of an inch)
1. Plain concrete	3	11. Edge-grain maple	2
2. Concrete with abrasive aggregate	3	12. Maple unit blocks	2
3. Concrete surfaced with 1:3 mortar	21	13. Maple strips, 4-coat finish	2
4. Concrete with liquid hardener	3	14. Maple strips, 2-coat finish	2
5. Concrete with metallic hardener	4	15. Maple strips, linseed-oil finish	2
6. Asphalt blocks	2	16. Magnesite with hardwood fiber	5
7. Asphalt plank	7	17. Plain magnesite	7
8. End-grain southern yellow pine	4	18. Linoleum	1
9. End-grain Douglas fir	4	19. Rubber sheet [1]	3
10. Quartersawed red oak	4	20. Rubber tile	1

[1] The sheet-rubber flooring was subjected to only 46,985 truck cycles.

Inspection of table 2 shows further that the wearing properties of concrete compare favorably with those of maple. In fact, after 60,000 truck cycles, there is but one thirty-second of an inch difference between the wear of concrete and maple. Later tests conducted by Sigler and Koerner (*2*) simulated more normal conditions of floor wear in households, but unfortunately omitted uncovered concrete. However, as in the previous tests, the order of resistance to wear was as follows: (1) Rubber tile, (2) linoleum, (3) wood (short strip maple), and (4) asphalt tile.

More extensive, although not comparable, tests on the wear of concrete surfaces have been conducted by Schuman and Tucker (*3*). Depending upon the mixture used, the values of wear ranged for one series of tests from 0.002 inch for the best mix to 0.019 inch for the poorest.[1] The tests developed by Schuman and Tucker are accelerated tests and hence are more severe than conditions to which concrete is subjected in the home. These investigators point out that the subsurface concrete is harder than the thin surface layer and that the wearing properties are improved. Quoting from the summary of the paper referred to:

1. For the same mix proportions, the wear resistance of concretes and mortars is greater for higher C/W ratios.* For equal C/W ratios, wear resistance increases with increasing proportion of aggregates up to a certain point, depending on the aggregates used, then decreases. Some mixes which had poor wear resistance at the surface were relatively more resistant after the surface "skin" was removed.

2. The shape of the aggregate particles (rounded or angular) affects the amount of water required for ease of placing and finishing, and thus may affect wear resistance of the concrete as much as the abrasion resistance of the particles themselves.

[1] The results were obtained by use of abrading steel disks rotating at a rate of 180 r. p. m. Each disk represented an area of 5.6 square inches loaded to 25 pounds. The tests in question were of 5 minutes' duration. For the usual mixes, the median value is 0.004 inch.

*Ratio of the weight of cement to weight of water.

3. In this investigation, delaying the troweling for 3 or more hours after placing the concrete tended to increase wear resistance, especially for mixes containing no coarse aggregate.

4. The wear resistance of many mixes is greatly improved by troweling into the surfaces dust coats of cement, of cement and sand, or of cement and metallic aggregate. For example, the slab to which was applied a heavy dust coat consisting of a mixture of two parts of metallic aggregate to one of cement, by weight, had the highest wear resistance of all slabs tested. A dust coat also facilitates finishing the surface of concrete made of a lean mix, such as 1 : 3 : 6.

5. Concrete made with a "normal" portland cement and aged in the air without damp-curing may show comparatively poor wear resistance; but damp-curing may increase the wear resistance appreciably. Where a high-early-strength cement is used, the damp-curing is not as necessary.

6. Liquid surface treatments, such as solutions of magnesium fluosilicate or of water glass, are effective in improving the wear resistance of concrete that has not been damp-cured.

7. The use of coarse aggregates, such as gravel, permits reduction in the water content of the mixes and helps to reduce pitting. The use of dust coats containing cement also helps to reduce pitting, especially when applied to lean mixes.

From the evidence cited in the above paragraphs, it does not appear that materials used in floor construction, such as hard woods and concrete, when properly laid, differ greatly in their wearing and, hence, dust-producing properties. Dustiness directly attributable to floors is generally due to materials of poor quality or to faulty construction.

In passing, it may be mentioned that concrete flooring, when wet, is alkaline. Bacteria may therefore be more readily destroyed on such surfaces than those of other materials, although it must be pointed out that water used in washing is generally alkalinized by soaps or other detergents so as to be sufficiently effective.

COMFORT

The fatigue effects attributed to floors of various materials are not susceptible of direct measurement. Personal factors, such as activity performed, the kind of shoes worn, and weight of the individual, to mention only three, complicate the treatment of this subject. Moreover, it is possible to obtain only subjective reactions of persons exposed to different floor materials, and these may be biased by such factors as softness, attractiveness, and noise-producing qualities. Perhaps the only approach to an understanding of this problem is to compare the relative resiliencies of different materials. The resiliencies may be regarded as indices of comfort, but no further inference should be drawn.

The measurements of resiliency cited in this paper are taken from tests of floor coverings made by the National Bureau of Standards (*4*). The basis of the measurements is derived by a special technique. Briefly, it comprises the use of a device which measures the indentation obtained in 30 seconds by means of a flat-ended pin, one-fourth

of an inch in diameter, carrying a 25-pound bearing load. This criterion is regarded as "an approximate measure of relative comfort value." [2]

It may be considered that the higher values of indentation give relatively a greater sensation of comfort. In this connection, it must be stressed that the indentation must be almost completely eliminated on the termination of the load; that is, the surface should recover to its previous state. This may be said to be the case with the types of floor coverings shown in table 3. The relative performances of floor coverings given in the table do not consider such properties as abrasive wear, effect of moisture, effect of aging, cost, ease of maintenance, resistance to tear and fracture, and similar items.

It is to be noted in table 3 that magnesium oxychloride and concrete finishes have the least amount of resiliency. However, the resiliencies of these finishes (derived from the technique previously mentioned) do not differ very much from the usual hard wood floors and asphalt. Both wood and concrete floors, without rugs or other coverings, are relatively less comfortable than linoleum, rubber tile, or cork composition coverings.

TABLE 3.—*Resiliency of various kinds of floor coverings as measured by the National Bureau of Standards technique (indentation at 30 seconds for load of 25 pounds on a flat-ended pin ¼ inch in diameter—0.001 inch) (4)*

Type of covering	Average thickness (inches)	Indentation (0.001 in.)	Type of covering	Average thickness (inches)	Indentation (0.001 in.)
Battleship linoleum (brown) [1]	0.190	16	Strip white oak	.783	1
Linoleum tile (marbleized) [1]	.125	9	Short strip maple	.796	½
Asphalt tile (black)	.135	2	Magnesium oxychloride [1]	.50	1
Sheet rubber (marbleized)	.127	5	Magnesium oxychloride [1]	.25	0
Rubber tile (marbleized) [1]	.190	3	Concrete topping (1:2 mix) [1]	1.00	½
Strip yellow pine	.789	2			

[1] Unpublished data supplied by P. A. Sigler, National Bureau of Standards.

The test results given in table 3 are based on samples with sub-floor equivalents which are absolutely rigid. A complete floor exhibits as a general rule greater resiliencies than those inferred from table 3. This follows from a consideration of load bending-moments of joists and beams upon which the complete floor is laid. From the data available, subject to the criterion used to determine comfort, it does not appear that concrete, asphalt, and hardwood floors possess markedly different properties of resiliency.

COLDNESS

The sensible heat loss experienced in connection with floor surfaces depends on the physical properties of the materials used, namely,

[2] The values of resiliency obtained are for materials mounted on an almost absolutely rigid base. Obviously, in practice, the "give" or "springiness" of the floor structure as a whole must be considered. Wood substructure, for example, "gives" better than steel or reinforced concrete.

heat conductance, specific heat, and smoothness. Materials such as concrete absorb heat at about twice the rate of wood. The kind of foot covering worn, however, reduces the rate of heat loss, and it is probable that at ordinary room temperatures the sensible heat loss is slight regardless of the floor surface considered. On the other hand, persons walking barefooted and small children playing on the floor will experience a marked sensation of coldness whenever the floor surface has a low specific heat and high conductivity.

Data pertaining to the heat conductivity of various types of floor construction have long been available (*5*). These data are used by engineers to calculate the heating requirements of homes and buildings. Unfortunately, data pertaining to the specific heats of various floor materials are more limited. Nor is the exact relation between conductance and specific heat known in order to determine the heat loss experienced from exposure to various floor surfaces. Some research is necessary before general qualitative conclusions can be made with regard to the physiological significance of the above-mentioned properties.

NOISE

The noise transmission properties of floors are a matter of much importance in multifamily dwellings. These noises are of two kinds: (*a*) Those due to conversation, and (*b*) noises communicated directly to the structure by walking, housekeeping, and the like. If materials are used in construction which are capable of transmitting a large amount of noise from within a given dwelling unit, the nuisance caused to other residents may reduce the desirability of the structure as a whole.

Chrisler and others (*6*, *7*) have pointed out that the suitability of a floor or wall panel from the standpoint of transmission loss depends upon the amount of general noise in the locality in which it is used. For example, a partition may be quite satisfactory in a downtown district where the general noise level is high, but unsatisfactory in the country, where the reverse is true. The presence of street noises in the first instance has a masking effect. Hence, what is heard through a partition depends not only on its construction and the noise level in the adjacent room, but also on the amount of general noise in the locality.

The desirable noise level for apartments, hotels, and homes is below 40 decibels. Ordinary conversation in a room may approximate 60 decibels. Hence, to achieve a desirable noise level in adjacent rooms, partitions should have transmission losses greater than 45 decibels.

Data on noise transmission losses for various types of floor panels have been published by the National Bureau of Standards (*6*, *7*). Some of these data are presented in table 4.

TABLE 4

Panel	Average transmission loss (in decibels)	Tapping	Panel	Average transmission loss (in decibels)	Tapping
129a	44.7	22.6	132c	52.6	17.1
129b	60.6	33.0	133a	51.6	15.3
129c	63.5	38.5	133b	53.7	20.2
129d		37.4	134	28.3	−2.4
130	38.1	11.1	135	26.8	−2.9
131	45.4	11.6	136a	52.9	6.5
132a	53.3	19.4	136b	61.2	21.1
132b	52.3		137	52.8	11.7

DESCRIPTION OF PANELS

129a. Combination floor panel constructed of 4 by 12 by 12-inch, 3-cell partition tile. The ceiling of this panel was finished with ½-inch of brown-coat gypsum plaster and a smooth white finish coat. The floor surface consisted of 13/16-inch oak flooring, nailed to 2 by 2-inch nailing strips 16 inches on centers, which were grouted into the concrete.

129b. Same as 129a, except that United States Gypsum resilient steel clips were inserted between the concrete and nailing strips.

129c. Same as 129b, except that the oak flooring was removed, and ½-inch gypsum plaster board was attached to the nailing strips and 1½ inch Hydrocal was applied on top of the plaster board.

129d. Same as 129c, except that 13/16-inch oak flooring was applied to the Hydrocal with a mastic cement.

130. Floor panel, 2 by 8-inch wood joist. Plaster on metal lath applied to lower side, subflooring and 13/16-inch oak flooring to upper side.

131. Floor panel, 2 by 4-inch wood joist. Plaster on metal lath applied to lower side, subflooring and 13/16-inch oak flooring to upper side.

132a. Floor panel, 2 by 8-inch wood joist. Plaster on metal lath applied to lower side, subflooring to upper side. 1-inch Balsam Wool was laid over the subfloor and on this were placed small squares (2½ by 2½ inches) of hard-pressed Nuwood spaced 16 inches on centers in each direction. Nailing strips 1¾ by 1¾ inches were placed on top of these Nuwood squares and held in place by a metal strap. The finish floor (13/16-inch oak) was nailed on top of these nailing strips.

132b. This was a floor in an apartment house and supposed to be constructed the same as 132a.

132c. Floor panel. This panel was the same as 132a, except that ½ inch Balsam Wool was used instead of 1 inch.

133a. Floor panel, 2 by 8-inch wood joist. Plaster on metal lath applied to lower side, subflooring to upper side. ½-inch Balsam Wool was laid over subfloor and ½-inch Nuwood was placed on top of the Balsam Wool. 1¾ by 1¾ inch nailing strips were spaced 16 inches on centers on top of the Nuwood and held in position by driving one nail at each end through the strip and into the subfloor. A finish floor of 13/16-inch oak was applied on top of the nailing strips.

133b. Floor panel. This panel was the same as 133a, except that strips of Nuwood 2½ inches wide were placed under the nailing strips, instead of entirely covering the ½-inch Balsam Wool with sheets of Nuwood.

134. Steel floor section with "Keystone section."

135. Steel floor section with flat top.

136a. Floor panel constructed by using steel section 135. The top of this section was covered with 2 inches of concrete and a suspended metal lath and plaster ceiling attached to the bottom, leaving approximately 4 inches between the metal section and plaster.

136b. Floor panel. This was the same as 136a, except that the 2-inch concrete slab was removed and ½ inch of emulsified asphalt applied directly to the top of the steel section. A 2-inch concrete slab was cast on top of this asphalt.

137. Floor panel constructed of 8-inch Mac Mar Joist, with 3-inch Thermax clipped on top and 1-inch Thermax clipped on bottom of joist. ½ inch of concrete was poured on top of the 3-inch Thermax. The floor was finished by cementing ¼-inch battleship linoleum on top of the concrete. The ceiling was finished by applying a brown coat of gypsum plaster and a smooth white finish coat.

The column marked "tapping" in table 4 gives the transmission loss for noise communicated directly to the test panel by a tapping device. In discussing the significance of the above series of tests, Chrisler and Snyder (7) comment as follows:

The results of these experiments give additional support to the statements published in previous papers* that when a wall or floor is more or less homogeneous it must be excessively heavy to be a good sound insulator. If, however, the wall or floor is built in layers which are as loosely connected together as possible, the sound-insulating properties will be greatly improved. This is illustrated by comparing panel 130 with panels 132a, 132b, or 132c. The essential difference between panel 130 and the others was that in 132a, 132b, and 132c, the finish floor was separated from the rest of the structure by a material which would yield a small amount and thus prevent an efficient transfer of energy from one part of the structure to the other. It should be noticed that this holds for both air-borne and tapping sounds. Similar results are shown by panels 129a, 129b, and 129c.

Panel 136a shows a decided improvement over panel 135 due to a hung ceiling and a 2-inch concrete floor slab. Panel 136b shows a still further improvement, especially for tapping noise, by separating the concrete slab from the steel section.

From the standpoint of noise transmission loss, as given in the second column of table 4, there do not appear to be very significant differences between the various types of construction listed. On the other hand, noises originating from impacts depend on the object creating the noise and the "yield" of the floor covering. Impact noises are more easily transmitted, as may be seen by reference to column 3 of the table, when the construction is a poor shock absorber.

DISCUSSION

The foregoing paragraphs indicate that floors constructed in accordance with the best accepted techniques possess only slight differences in physical properties. Complaints often made in regard to certain kinds of floors, with a few exceptions, can be attributed to poor design, materials, workmanship, or construction. The physical indices discussed in this paper are valuable as measures of sanitary, physiological, and even livability factors.

The problem of attitudes on the part of occupants is the most important item which at present seems to determine the choice of floor used. These attitudes are not limited to the physical properties of floors with which this paper is concerned, but with such matters as preconceived opinions and attractiveness. The solution of these aspects depends upon education of occupants to overcome preconceived ideas and the development of attractive treatments of floor surfaces by architects and engineers.

ACKNOWLEDGMENT

The author desires to acknowledge the assistance of the following individuals: Vincent B. Phelan, P. A. Sigler, John Tucker, Jr., and V. L. Chrisler, all of the National Bureau of Standards, Washington, D. C.

*Bureau of Standards J. Research, 2: 541 (1929), RP48. Cir. Bureau of Standards 403 (June 23, 1933).

REFERENCES

(1) Emley, Warren E., and Hofer, Carl E.: Test of floor coverings for post-office workrooms. Research Paper RP1046, Journal of Research, National Bureau of Standards, **19**:567–570 (1937).
(2) Sigler, Percy A., and Koerner, Elmer A.: Building materials and structures. Report BMS34. Performance test of floor coverings for use in low-cost housing: Part 1. National Bureau of Standards, Washington, 1940.
Sigler, Percy A., and Koerner, Elmer A.: Building materials and structures. Report BMS43. Performance test of floor coverings for use in low-cost housing: Part 2. National Bureau of Standards, Washington, 1940.
(3) Schuman, Louis, and Tucker, John, Jr.: A portable apparatus for determining the relative wear resistance of concrete floors. Journal of Research, National Bureau of Standards, **23**:549–570 (1939).
(4) Sigler, Percy A., and Woodward, Myrtle B.: Building materials and structures. Report BMS14. Indentation and recovery of low-cost floor coverings. National Bureau of Standards, Washington, 1939.
(5) Guide. Amer. Soc. of Heat. and Vent. Engineers, 1936 edition, chapter 5. Published by the Society, 51 Madison Ave., New York, N. Y.
(6) Chrisler, V. L.: Building materials and structures. Report BMS17. Sound insulation of wall and floor constructions. National Bureau of Standards, Washington, 1939.
(7) Chrisler, V. L., and Snyder, Wilbert F.: Recent sound-transmission measurements at the National Bureau of Standards. Research Paper RP800, Journal of Research, National Bureau of Standards, **14**:749–764 (1935).

STUDIES ON THE DURATION OF DISABLING SICKNESS

I. Duration of Disability from Sickness and Nonindustrial Injuries Among the Male and Female Memberships of 25 Industrial Sick Benefit Organizations, 1935–37, Inclusive [1]

By WILLIAM M. GAFAFER, *Senior Statistician*, and ELIZABETH S. FRASIER, *Junior Statistician, United States Public Health Service*

That there is a notable paucity of published material on the duration of disability from sickness and nonindustrial injuries among industrial workers is well known, particularly by those engaged in activities related to the protection and improvement of the health of the worker. Sufficient data, based on periodic reports from industrial sick benefit organizations, have accumulated in the Division of Industrial Hygiene of the National Institute of Health to make possible a substantial addition to the contributions of Keffer (*1*), Bassford (*2*), and Fitzhugh (*3*).

It is purposed to present the results of certain analyses in a series of papers, the first, the present one, to deal with the combined experiences of 25 industrial sick benefit organizations subscribing to waiting and maximum benefit periods of varying length. The results, based on all disabilities that lasted 8 calendar days or longer, will be shown specific for sex and for the 3 broad cause groups, respiratory diseases, nonrespiratory diseases, and nonindustrial injuries. The memberships are essentially white; their age distributions are not available.

[1] From the Division of Industrial Hygiene, National Institute of Health.

The analysis covers the 3 years, 1935–37, and only ended cases are included.

The second paper of the series will draw on the experiences of 8 industrial sick benefit organizations all subscribing to a maximum benefit period of 52 weeks.

THE SICK BENEFIT ORGANIZATIONS

The 25 sick benefit organizations comprised mutual sick benefit associations, group insurance plans, and company relief departments. All of the 25 organizations supplied data on males; the organizations were distributed geographically as follows: 5 in Pennsylvania, 4 in Illinois, 3 each in Connecticut, Massachusetts, and New York, 2 in Ohio, and 1 each in Maine, Minnesota, New Jersey, South Dakota, and Canada. Nineteen of the 25 organizations supplied data on females and these were located as follows: 5 in Pennsylvania, 3 each in Illinois and New York, 2 each in Connecticut and Ohio, and 1 each in Massachusetts, Maine, Minnesota, and New Jersey.

It should be recognized that data of the type used in this study have a number of inherent limitations which have been referred to in recent articles (*4–6*). Briefly these limitations, among others, have to do with whether membership was voluntary, with the exclusion from membership of employees under or above a certain age, the exclusion of persons with particular chronic diseases, and the exclusion of workers in certain occupations, or because of particular physical defects found at examination at the time of application for membership. While each sick benefit organization did not necessarily subscribe to all elements possibly imposing limitations on the data, nevertheless the memberships may be considered, to some extent, selected groups.

ANALYSIS OF THE DATA

Exposure by industry.—The data for the 3 years are based on records for 215,564 male years of life and 36,622 female years. These exposures may be conveniently classified according to industry as shown in the accompanying table. It will be observed that the public utilities rank first in both lists of percentages. In fact, this industry represents over 40 percent of the male exposure and almost one-quarter of the female exposure. Over 60 percent of the male exposure is accounted for by public utilities, and industries engaged in the making of cameras and photographic supplies, and plumbing fixtures, while approximately 70 percent of the female exposure is represented by public utilities, and industries producing cameras and photographic supplies, wearing apparel, and electric lamps.

Industry	Number		Percent	
	Male years	Female years	Male years	Female years
Total	215,564	36,622	100.0	100.0
Public utilities	89,597	8,689	41.6	23.7
Cameras and photographic supplies	22,065	6,094	10.2	16.6
Plumbing fixtures	21,640	1,977	10.0	5.4
Soap	17,970	2,336	8.3	6.4
Machinery	13,999	1,437	6.5	4.0
Iron and steel	10,757		5.0	
Wearing apparel	7,814	5,983	3.6	16.3
Metal mining	6,381		3.0	
Printing and publishing	5,480	1,990	2.5	5.4
Electric lamps	5,029	4,840	2.3	13.2
Time pieces	2,313	2,255	1.1	6.2
Miscellaneous	[1] 12,519	[2] 1,021	5.9	2.8

[1] Abrasives, chemicals, office furniture, paper, and paper novelties.
[2] Office furniture and paper.

Summary of basic data.—While only approximately 10 percent of the combined memberships of the 25 sick benefit organizations subscribed to waiting periods other than 7 days, the maximum benefit periods (including the waiting periods) ranged from 56 through 372 days.[3] Over one-half of the total male and female memberships, respectively, was subject to a maximum benefit period of 185 days and over. These facts, among others, are given in table 1. The table also shows, by sex and maximum benefit period, the number of cases and the number of days of disability arising therefrom. The 20,032 cases among males and the 5,362 cases among females are further shown by duration according to weekly intervals up to 99 days and thereafter to 372 days according to 13-week intervals. It will be observed that in the calculation of the two rates, frequency and disability, the combined memberships are appropriately reduced when the case duration exceeds a particular maximum benefit period. Thus, for the duration 50–56 days the membership for males is 215,564 years. The next duration, 57–63 days, is reduced to 208,352 years since one of the sick benefit organizations has a maximum benefit period (including the waiting period) of 56 days, and a membership representing the amount deducted, namely, 7,212 years. Of interest is the decrease in both rates as the duration increases, the rate for females being generally greater than the corresponding rate for males. The precipitous decline of the frequency rate during the first 4 weeks is clearly in evidence for both sexes.

[3] Three organizations subscribed to a maximum benefit period longer than 372 days; cases in these organizations lasting longer than 372 days were artificially terminated at 372 days.

TABLE 1.—*Summary of basic data, experience of members of 25 industrial sick benefit organizations, cases lasting 8 calendar days or longer due to sickness and nonindustrial injuries and ending during 1935 [illegible]*

TABLE 1.—*Summary of basic data, experience of members of 25 industrial sick benefit organizations, cases lasting 8 calendar days or longer due to sickness and nonindustrial injuries and ending during 1935–37, inclusive*

Duration of cases in calendar days [1]	Person-years of membership		Days of disability				Cases				Number of cases															
			Annual number per person		Total number		Annual number per 1,000 persons		Total number		Maximum benefit period in days (including the waiting period) [2]															
											56	63	73–77	91 [3]	97–98	185–189	279	372	56	63	77	91 [3]	97	189	372
	Males	Females	Males	Females	Males	Females	Males	Females	Males	Females	Males								Females						
All durations	215,564	36,622	----	----	724,231	199,948	92.9	146.4	20,032	5,362	452	205	2,085	1,489	2,856	47,72	1,459	6,759	157	411	524	451	71	2,601	1,147
8–14	215,564	36,622	0.379	0.520	81,610	19,030	34.9	47.0	7,516	1,722	73	72	935	558	711	1,573	823	2,771	16	56	227	195	17	706	505
15–21	215,564	36,622	.275	.435	59,302	15,917	15.3	24.2	3,315	888	64	25	328	266	498	825	223	1,086	16	82	93	79	4	455	159
22–28	215,564	36,622	.222	.363	47,826	13,301	8.9	14.4	1,912	529	56	17	187	146	250	499	116	641	17	58	37	43	8	264	102
29–35	215,564	36,622	.210	.350	45,364	13,201	6.5	11.2	1,410	409	40	21	139	104	217	348	69	472	14	28	40	25	5	217	80
36–42	215,564	36,622	.192	.341	41,310	12,498	4.9	8.7	1,053	317	32	14	99	77	182	256	57	336	6	31	24	23	2	176	55
43–49	215,564	36,622	.179	.333	38,538	12,200	3.9	7.2	837	263	26	11	92	66	153	201	40	248	11	22	27	15	3	140	45
50–56	215,564	36,622	.129	.325	27,897	11,906	2.4	6.1	526	224	4	6	46	33	99	150	13	175	5	21	16	15	5	122	40
57–63	208,352	33,837	.146	.281	30,385	9,512	2.4	4.7	505	158	----	4	49	40	105	134	16	157	----	23	19	11	4	80	21
64–70	206,878	30,495	.102	.190	21,111	5,793	1.5	2.8	314	86	----	----	28	18	76	80	10	102	----	----	5	4	3	55	19
71–77	206,878	30,495	.101	.172	20,894	5,256	1.4	2.3	282	71	----	----	30	19	59	75	5	94	----	----	7	6	5	43	10
78–84	180,447	26,263	.080	.180	14,393	4,723	1.0	2.2	177	58	----	----	----	16	39	61	8	53	----	----	----	4	2	35	17
85–91	180,447	26,263	.098	.175	17,634	4,587	1.1	2.0	200	52	----	----	----	24	52	44	9	71	----	----	----	4	2	32	14
92–98	164,161	23,281	.080	.143	13,199	3,320	.8	1.5	139	35	----	----	----	----	28	62	3	46	----	----	----	----	1	25	9
99–189	125,013	22,831	.563	1.151	70,938	26,281	4.1	8.5	522	195	----	----	----	----	----	226	30	266	----	----	----	----	----	153	42
190–280	77,077	8,515	.275	.378	21,161	3,218	1.2	1.6	91	14	----	----	----	----	----	----	15	76	----	----	----	----	----	----	14
281–371	70,696	8,515	.331	.232	23,406	1,973	1.0	.7	70	6	----	----	----	----	----	----	----	70	----	----	----	----	----	----	6
Cases reaching maximum benefit	----	----	----	----	149,263	37,232	5.4	9.1	1,163	335	157	35	152	122	387	193	22	95	72	90	29	27	10	98	9
Person-years of membership	215,564	36,622	----	----	----	----	----	----	----	----	7,212	1,474	26,431	16,286	38,148	48,936	6,381	70,696	2,785	3,342	4,232	2,982	450	14,316	8,515
Days of disability	----	----	----	----	724,231	199,948	----	----	----	----	16,750	6,101	54,134	45,210	113,672	184,200	39,682	264,482	6,560	14,827	13,643	12,257	3,317	108,608	40,736
Number of organizations	25	19	----	----	----	----	----	----	----	----	1	2	4	4	2	5	1	6	1	2	2	4	1	4	5

[1] The number of days of disability is the number of calendar days from the date disability began to the date of return to work, or to the end of the maximum benefit period.
[2] Approximately 10 percent of the combined memberships subscribed to waiting periods other than 7 days.
[3] Maximum benefit period of 91 days, retroactive to first day.

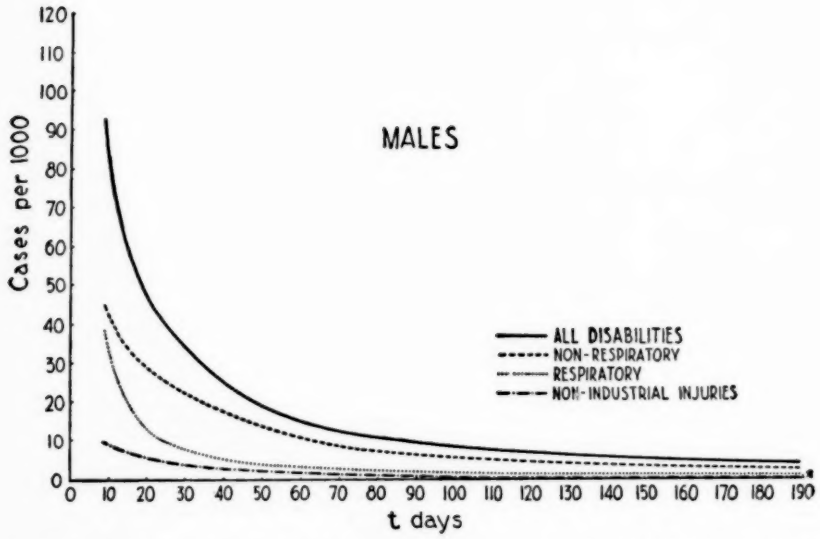


FIGURE 1A.—Annual number of cases per 1,000 MALES of sickness and nonindustrial injuries disabling for a specified number of days (t) or more, experience of male members of industrial sick benefit organizations, cases lasting 8 calendar days or longer and ending during 1935–37, inclusive.

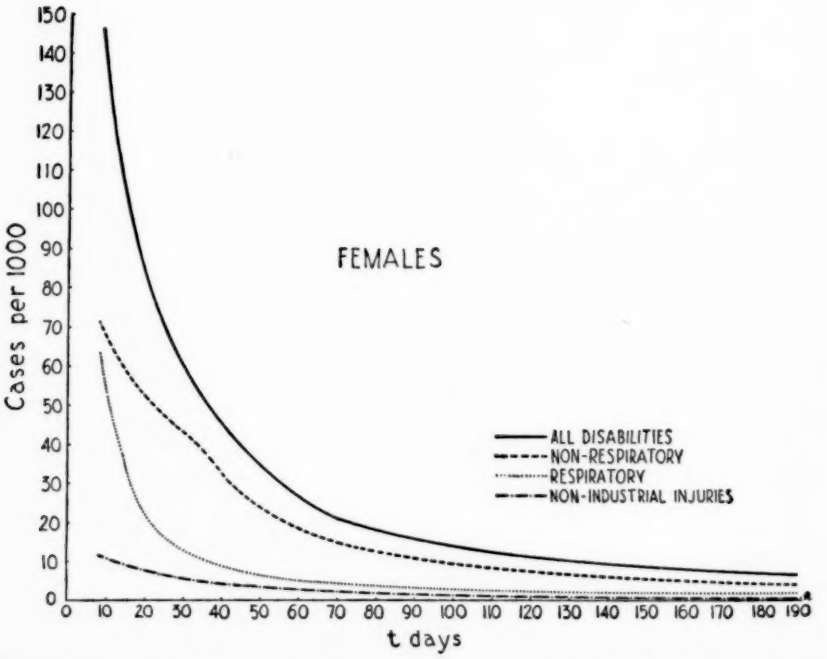


FIGURE 1B.—Annual number of cases per 1,000 FEMALES of sickness and nonindustrial injuries disabling for a specified number of days (t) or more, experience of female members of industrial sick benefit organizations, cases lasting 8 calendar days or longer and ending during 1935–37, inclusive.

Annual number of cases per 1,000 persons of sickness and nonindustrial injuries disabling for a specified number of days (t) or more.—Table 2 presents the pertinent data by sex and broad cause group. The frequencies are shown graphically (through 190 days) in figures 1A and 1B. It will be observed that the rates for the females are generally higher than the corresponding ones for the males, and that the nonrespiratory group of causes presents for both sexes the highest frequency of cases lasting 8 days and longer. All of the frequencies decline gradually, moving relatively rapidly during the early days of disability. The rapidity of decline of the different frequencies is of considerable interest. The nonrespiratory group declines most slowly; this group is followed by the nonindustrial injuries, and then by the respiratory group which declines most rapidly. With respect to each cause group the frequencies for the females decline more slowly than those for the males. The rapidity of decline may be viewed quantitatively by ascertaining the day (t) after onset of disability when the frequencies of cases disabling t days or more are approximately one-half of the corresponding initial frequencies. Thus, for the nonrespiratory group the initial frequency for males and females is approximately halved on the twenty-eighth day and during the fifth week, respectively; for nonindustrial injuries the corresponding figures are the twenty-third and twenty-sixth days, and for respiratory diseases, the fourteenth and fifteenth days. All of these observations reflect the relative magnitude of the length of the cases characterizing the different cause groups.

Annual number of days of disability per person resulting from all disabilities contributing t days or less.—Table 3 presents the data by sex and broad cause group. The days of disability do not include those arising from cases of less than 8 days in duration nor from fatal cases which terminated in death prior to the eighth day of disability. Figure 2 shows the material graphically. It should be observed that the horizontal axis which carries a logarithmic scale may be viewed as an axis of maximum benefit periods.[3] For example, the average annual number of days of disability per person corresponding to a maximum benefit period of 53 weeks is 3.9 for males and 6.2 for females. Disability rates, specific for sex and broad cause group, may therefore be determined graphically for a maximum benefit period of any length up to 53 weeks. The figure thus shows the effect on the disability rate of changes in the length of the maximum benefit period.

[3] The reader is reminded that "maximum benefit period" here includes a waiting period of 7 days.

TABLE 2.—*Annual number of cases per 1,000 persons, by sex and broad cause group, of sickness and nonindustrial injuries disabling for a specified number of days (t) or more, experience of members of industrial sick benefit organizations, cases lasting 8 calendar days or longer and ending during 1935–37, inclusive*

t days	Annual number of cases per 1,000 persons disabling for t days or more								Number of cases disabling for t days or more							
	All sickness and nonindustrial injuries		Nonindustrial injuries		Respiratory diseases		Nonrespiratory diseases		All sickness and nonindustrial injuries		Nonindustrial injuries		Respiratory diseases		Nonrespiratory diseases	
	Males	Females	Males	Females	Males	Females	Males	Females	Males	Females	Males	Females	Males	Females	Males	Females
8	92.9	146.4	9.7	12.0	38.2	63.0	45.0	71.4	20,032	5,362	2,080	440	8,245	2,307	9,707	2,615
9	87.2	139.9	9.2	11.5	34.8	59.0	43.2	69.4	18,806	5,125	1,992	423	7,493	2,161	9,321	2,541
10	81.6	133.8	8.8	11.1	31.3	54.8	41.5	67.9	17,583	4,899	1,901	406	6,747	2,008	8,935	2,485
11	76.4	126.1	8.3	10.7	28.3	49.7	39.8	65.7	16,470	4,618	1,802	391	6,095	1,821	8,573	2,406
12	71.9	120.0	8.1	10.4	25.6	45.7	38.2	63.9	15,494	4,393	1,736	380	5,526	1,672	8,232	2,341
13	67.5	113.3	7.8	10.0	23.0	41.2	36.7	62.1	14,547	4,151	1,679	366	4,963	1,511	7,905	2,274
14	63.5	106.7	7.4	9.5	20.8	37.2	35.3	60.0	13,678	3,908	1,596	349	4,475	1,363	7,607	2,196
15	58.0	99.4	6.9	9.1	17.9	32.2	33.2	58.1	12,516	3,640	1,488	331	3,867	1,180	7,161	2,129
16	55.3	95.5	6.5	8.8	16.6	29.7	32.2	57.0	11,912	3,496	1,405	320	3,559	1,088	6,948	2,088
17	52.9	91.4	6.2	8.3	15.3	27.2	31.4	55.9	11,414	3,347	1,343	304	3,308	995	6,763	2,048
18	50.9	88.3	6.1	8.0	14.3	25.5	30.5	54.8	10,962	3,232	1,301	291	3,076	934	6,585	2,007
19	49.0	85.3	5.8	7.8	13.4	23.8	29.8	53.7	10,555	3,125	1,241	285	2,899	874	6,415	1,966
20	47.2	82.4	5.5	7.5	12.8	22.1	28.9	52.8	10,176	3,019	1,187	276	2,750	810	6,239	1,933
21	45.3	78.9	5.4	7.2	11.9	20.3	28.0	51.4	9,764	2,890	1,156	263	2,567	744	6,041	1,883
22	42.7	75.1	5.0	6.8	11.0	18.4	26.7	49.9	9,201	2,752	1,084	248	2,357	676	5,760	1,828
23	41.2	73.3	4.8	6.6	10.3	17.6	26.1	49.1	8,892	2,683	1,044	242	2,230	642	5,618	1,799
24	39.9	70.9	4.7	6.4	9.9	16.5	25.3	48.0	8,612	2,597	1,018	234	2,137	606	5,457	1,757
25	38.8	69.1	4.6	6.2	9.5	15.8	24.7	47.1	8,348	2,529	989	227	2,051	577	5,308	1,725
26	37.7	67.3	4.5	6.0	9.1	15.1	24.1	46.2	8,136	2,466	963	221	1,969	553	5,204	1,692
27	36.5	65.6	4.3	5.7	8.7	14.5	23.5	45.4	7,875	2,403	933	210	1,877	529	5,065	1,664
28	35.4	63.4	4.2	5.5	8.3	13.5	22.9	44.4	7,633	2,323	907	201	1,780	496	4,946	1,626
35	28.6	51.6	3.4	4.7	6.2	9.9	19.0	37.0	6,160	1,889	729	171	1,327	363	4,104	1,355
42	23.4	42.7	2.8	4.1	4.9	8.1	15.7	30.5	5,013	1,562	591	149	1,060	296	3,392	1,117
49	19.2	35.3	2.2	3.4	4.0	6.5	13.0	25.4	4,144	1,292	475	122	861	239	2,808	931
56	16.5	28.5	1.8	2.8	3.4	5.4	11.3	20.3	3,552	1,042	396	103	729	196	2,427	743
63	13.9	23.7	1.4	2.3	2.9	4.6	9.6	16.8	2,888	801	294	77	601	155	1,993	569
70	12.1	20.4	1.2	1.7	2.5	4.0	8.4	14.7	2,508	621	247	52	514	121	1,747	448
77	10.7	17.9	1.0	1.6	2.2	3.5	7.5	12.8	2,211	545	208	48	451	106	1,552	391
84	10.4	17.4	.9	1.6	2.1	3.3	7.4	12.5	1,873	457	163	43	385	86	1,325	328
91	9.2	15.3	.7	1.5	1.9	2.9	6.6	10.9	1,671	403	133	40	342	76	1,196	287
98	8.6	14.4	.7	1.2	1.8	2.8	6.1	10.4	1,403	335	110	27	295	66	997	242
105	7.4	13.1	.6	1.1	1.7	2.6	5.1	9.4	927	298	75	25	209	59	643	214
112	6.8	11.8	.6	1.0	1.5	2.5	4.7	8.3	858	269	74	23	191	57	593	189
119	6.4	10.8	.6	.8	1.4	2.3	4.4	7.7	805	246	70	18	181	52	554	176
126	6.0	9.9	.5	.7	1.4	2.2	4.1	7.0	760	225	63	16	177	50	520	159
133	5.7	9.2	.5	.6	1.3	2.0	3.9	6.6								

133	5.7	9.2	.5	.6	1.3	2.0	3.9	6.6	716	211	56	13	196	46	494	152
140	5.5	8.6	.4	.6	1.3	1.9	3.8	6.1	687	197	51	13	161	44	475	140
147	5.2	8.4	.4	.6	1.2	1.9	3.6	5.9	655	192	47	13	154	44	454	135
154	4.9	7.9	.3	.5	1.2	1.9	3.4	5.5	621	181	40	12	148	43	433	126
161	4.7	7.5	.3	.5	1.1	1.8	3.3	5.2	589	171	37	11	142	41	410	119
168	4.5	7.0	.3	.5	1.1	1.6	3.1	4.9	560	160	35	11	140	36	394	113
175	4.3	6.8	.3	.5	1.1	1.5	2.9	4.8	547	155	34	11	138	35	375	109
182	4.2	6.4	.3	.4	1.1	1.5	2.8	4.5	523	145	33	9	134	34	356	103
189	3.7	5.7	.2	.4	.9	1.4	2.6	3.9	471	129	30	8	119	31	322	90
196	3.5	3.3	.2	.2	.9	.5	2.4	2.6	272	28	21	2	74	4	177	22
203	3.4	3.2	.2	.2	.9	.5	2.3	2.5	263	27	19	2	70	4	174	21
210	3.3	3.2	.2	.2	.9	.5	2.2	2.5	258	27	19	2	69	4	170	21
217	3.3	2.8	.2	.1	.9	.5	2.2	2.2	251	24	19	1	67	4	165	19
224	3.1	2.6	.2	.1	.8	.5	2.1	2.0	242	22	18	1	66	4	158	17
231	3.0	2.5	.2	.1	.8	.5	2.0	1.9	233	21	18	1	62	4	153	16
238	2.9	2.3	.2	.1	.8	.5	1.9	1.7	225	20	16	1	61	4	148	15
245	2.8	2.2	.2	.1	.8	.5	1.8	1.6	218	19	15	1	60	4	143	14
252	2.7	2.1	.2	.1	.7	.5	1.8	1.5	211	18	15	1	57	4	139	13
259	2.7	2.0	.2	.1	.7	.5	1.8	1.4	206	17	15	1	57	4	134	12
266	2.6	2.0	.2	.1	.7	.5	1.7	1.4	201	17	15	1	57	4	129	12
273	2.5	1.9	.2	.1	.7	.4	1.6	1.4	196	16	15	1	57	3	124	12
280	2.2	1.8	.2	.1	.6	.4	1.4	1.3	166	15	14	1	44	3	108	11
287	2.2	1.6	.2	.1	.6	.2	1.4	1.3	161	14	13	1	43	2	105	11
294	2.2	1.6	.2	.1	.6	.2	1.4	1.3	155	14	12	1	43	2	100	11
301	2.2	1.6	.2	.1	.6	.2	1.4	1.3	151	14	11	1	43	2	97	11
308	2.1	1.6	.2	.1	.6	.2	1.3	1.3	147	11	11	1	41	2	95	11
315	2.1	1.6	.2	.1	.6	.2	1.3	1.3	141	14	11	1	41	2	89	11
322	2.0	1.5	.2	.1	.6	.1	1.2	1.3	140	13	11	1	40	1	89	11
329	1.9	1.5	.2	.1	.5	.1	1.2	1.3	137	13	11	1	39	1	87	11
336	1.9	1.3	.2	0	.5	.1	1.2	1.2	132	11	10	0	39	1	83	10
343	1.8	1.3	.2	0	.5	.1	1.1	1.2	128	11	10	0	38	1	80	10
350	1.8	1.2	.2	0	.5	.1	1.1	1.2	126	10	10	0	38	1	78	9
357	1.7	1.1	.1	0	.5	.1	1.1	1.0	122	9	9	0	36	1	77	8
364	1.7	1.1	.1	0	.5	.1	1.1	1.0	118	9	9	0	34	1	75	8
371	1.4	1.1	.1	0	.4	.1	.9	1.0	97	9	7	0	30	1	60	8
372	1.3	1.1	.1	0	.4	.1	.8	1.0	95	9	7	0	30	1	58	8

NOTE.—The durations of all disabilities include the first 7 days of disability.

TABLE 3.—*Annual number of days of disability per person, by sex and broad cause group, resulting from all disabilities contributing t days or less, experience of members of industrial sick benefit organizations, cases lasting 8 calendar days or longer due to sickness and nonindustrial injuries, and ending during 1935–37, inclusive*

t days	Annual number of days of disability per person resulting from all disabilities contributing t days or less								Number of days of disability resulting from all disabilities contributing t days or less							
	All sickness and nonindustrial injuries		Nonindustrial injuries		Respiratory diseases		Nonrespiratory diseases		All sickness and nonindustrial injuries		Nonindustrial injuries		Respiratory diseases		Nonrespiratory diseases	
	Males	Females	Males	Females	Males	Females	Males	Females	Males	Females	Males	Females	Males	Females	Males	Females
8	0.743	1.171	0.077	0.096	0.306	0.504	0.360	0.571	160,256	42,896	16,640	3,520	65,960	18,456	77,656	20,920
9	.831	1.311	.086	.108	.341	.563	.404	.640	179,062	48,021	18,632	3,943	73,453	20,617	86,977	23,461
10	.912	1.445	.095	.119	.372	.618	.445	.708	196,645	52,920	20,533	4,349	80,200	22,625	95,912	25,946
11	.989	1.571	.104	.129	.400	.668	.485	.774	213,115	57,538	22,335	4,740	86,295	24,446	104,485	28,352
12	1.061	1.691	.112	.140	.426	.713	.523	.838	228,609	61,931	24,071	5,120	91,821	26,118	112,717	30,693
13	1.128	1.804	.119	.150	.449	.754	.560	.900	243,156	66,082	25,750	5,486	96,784	27,629	120,622	32,967
14	1.191	1.911	.127	.159	.469	.792	.595	.960	256,834	69,990	27,346	5,835	101,259	28,992	128,229	35,163
15	1.250	2.010	.134	.168	.488	.824	.628	1.018	269,350	73,630	28,834	6,166	105,126	30,172	135,390	37,292
16	1.305	2.106	.140	.177	.504	.854	.661	1.075	281,262	77,126	30,239	6,486	108,685	31,260	142,338	39,380
17	1.358	2.197	.146	.185	.520	.881	.692	1.131	292,676	80,473	31,582	6,790	111,993	32,255	149,101	41,428
18	1.409	2.286	.153	.194	.534	.906	.722	1.186	303,638	83,705	32,883	7,081	115,069	33,189	155,686	43,435
19	1.458	2.371	.159	.201	.547	.930	.752	1.240	314,193	86,830	34,124	7,366	117,968	34,063	162,101	45,401
20	1.505	2.453	.164	.209	.560	.952	.781	1.292	324,369	89,849	35,311	7,642	120,718	34,873	168,340	47,334
21	1.550	2.532	.169	.216	.572	.972	.809	1.344	334,133	92,739	36,467	7,905	123,285	35,617	174,381	49,217
22	1.593	2.607	.174	.222	.583	.991	.836	1.394	343,334	95,491	37,551	8,153	125,642	36,293	180,141	51,045
23	1.634	2.681	.179	.229	.593	1.009	.862	1.443	352,226	98,174	38,595	8,395	127,872	36,935	185,759	52,844
24	1.674	2.752	.184	.236	.603	1.025	.887	1.491	360,838	100,771	39,613	8,629	130,009	37,541	191,216	54,601
25	1.713	2.821	.188	.242	.613	1.041	.912	1.538	369,186	103,300	40,602	8,856	132,060	38,118	196,524	56,326
26	1.750	2.888	.193	.248	.621	1.056	.936	1.584	377,322	105,766	41,565	9,077	134,029	38,671	201,728	58,018
27	1.787	2.954	.197	.254	.631	1.070	.959	1.630	385,197	108,169	42,498	9,287	135,906	39,200	206,793	59,682
28	1.822	3.017	.202	.259	.639	1.084	.981	1.674	392,830	110,492	43,405	9,488	137,686	39,696	211,739	61,308
35	2.040	3.411	.228	.292	.687	1.164	1.125	1.955	439,867	124,939	48,998	10,758	148,128	42,575	242,741	71,606
42	2.218	3.736	.249	.322	.725	1.226	1.244	2.188	478,104	136,821	53,452	11,865	156,244	44,827	268,408	80,129
49	2.363	4.003	.266	.347	.755	1.276	1.342	2.380	509,411	146,613	57,038	12,804	162,822	46,650	289,551	87,159
56	2.485	4.221	.280	.368	.780	1.317	1.425	2.536	535,775	154,613	60,008	13,573	168,222	48,168	307,545	92,872
63	2.589	4.402	.291	.386	.801	1.352	1.497	2.664	557,487	160,737	62,245	14,173	172,706	49,346	322,536	97,218
70	2.678	4.553	.300	.399	.819	1.382	1.559	2.772	575,980	165,340	64,100	14,573	176,528	50,247	335,352	100,520
77	2.757	4.685	.308	.410	.835	1.408	1.614	2.867	592,292	169,357	65,665	14,919	179,860	51,033	346,767	103,405
84	2.833	4.814	.315	.421	.851	1.433	1.667	2.960	605,943	172,736	66,865	15,221	182,681	51,673	356,397	105,842
91	2.901	4.927	.321	.432	.864	1.454	1.716	3.041	618,264	175,713	67,892	15,505	185,193	52,236	365,179	107,972
98	2.961	5.032	.326	.441	.877	1.474	1.758	3.117	628,093	178,162	68,682	15,712	187,283	52,708	372,128	109,742
105	3.014	5.127	.330	.449	.889	1.492	1.795	3.186	634,794	180,336	69,223	15,898	188,780	53,130	376,791	111,308
112	3.063	5.215	.334	.457	.900	1.510	1.829	3.248	640,996	182,338	69,742	16,070	190,176	53,534	381,078	112,734

119	3.109	5.294	.338	.463	.910	1.527	1.861	3.304	646,775	184,150	70,244	16,211	191,482	53,919	385,049	114,020
126	3.152	5.366	.342	.468	.920	1.543	1.890	3.355	652,231	185,796	70,701	16,330	192,732	54,278	388,798	115,188
133	3.193	5.432	.345	.472	.930	1.558	1.918	3.402	657,372	187,311	71,111	16,428	193,926	54,615	392,335	116,268
140	3.232	5.494	.348	.476	.939	1.571	1.945	3.447	662,258	188,732	71,486	16,519	195,069	54,924	395,703	117,289
147	3.269	5.553	.351	.480	.948	1.584	1.970	3.489	666,942	190,081	71,828	16,610	196,162	55,232	398,952	118,239
154	3.304	5.610	.353	.484	.956	1.597	1.995	3.529	671,407	191,378	72,128	16,695	197,224	55,537	402,055	119,146
161	3.337	5.664	.355	.488	.964	1.610	2.018	3.566	675,604	192,605	72,392	16,777	198,228	55,828	404,984	120,000
168	3.369	5.715	.357	.491	.972	1.622	2.040	3.602	679,645	193,770	72,648	16,854	199,217	56,096	407,780	120,820
175	3.400	5.763	.359	.494	.980	1.633	2.061	3.636	683,535	194,868	72,892	16,931	200,188	56,344	410,455	121,593
182	3.430	5.809	.361	.497	.988	1.644	2.081	3.668	687,289	195,914	73,129	16,997	201,141	56,588	413,019	122,329
189	3.457	5.852	.363	.500	.995	1.654	2.099	3.698	690,728	196,890	73,350	17,058	202,000	56,813	415,378	123,019
196	3.482	5.875	.365	.502	1.002	1.657	2.115	3.716	692,654	197,087	73,497	17,072	202,528	56,841	416,629	123,174
203	3.506	5.897	.367	.504	1.008	1.660	2.131	3.733	694,514	197,278	73,630	17,086	203,025	56,869	417,859	123,323
210	3.530	5.919	.369	.506	1.014	1.663	2.147	3.750	696,336	197,467	73,763	17,100	203,511	56,897	419,062	123,470
217	3.553	5.941	.371	.508	1.020	1.666	2.162	3.767	698,106	197,652	73,896	17,113	203,982	56,925	420,228	123,614
224	3.575	5.960	.373	.509	1.026	1.669	2.176	3.782	699,822	197,811	74,027	17,120	204,447	56,953	421,348	123,738
231	3.596	5.977	.375	.510	1.031	1.672	2.190	3.795	701,478	197,959	74,153	17,127	204,890	56,981	422,435	123,851
238	3.617	5.994	.377	.511	1.036	1.675	2.204	3.808	703,078	198,101	74,274	17,134	205,322	57,009	423,482	123,958
245	3.637	6.010	.379	.512	1.041	1.678	2.217	3.820	704,625	198,237	74,379	17,141	205,748	57,037	424,498	124,059
252	3.656	6.025	.380	.513	1.046	1.681	2.230	3.831	706,115	198,368	74,484	17,148	206,151	57,065	425,480	124,155
259	3.675	6.039	.381	.514	1.051	1.684	2.243	3.841	707,566	198,491	74,589	17,155	206,550	57,093	426,427	124,243
266	3.693	6.053	.382	.515	1.056	1.687	2.255	3.851	708,989	198,610	74,694	17,162	206,949	57,121	427,346	124,327
273	3.711	6.066	.383	.516	1.061	1.689	2.267	3.861	710,372	198,722	74,799	17,169	207,348	57,142	428,225	124,411
280	3.728	6.078	.384	.517	1.066	1.691	2.278	3.870	711,685	198,827	74,903	17,176	207,732	57,163	429,050	124,488
287	3.744	6.090	.385	.518	1.070	1.693	2.289	3.879	712,827	198,931	74,999	17,183	208,033	57,183	429,795	124,565
294	3.760	6.102	.386	.519	1.074	1.695	2.300	3.888	713,932	199,029	75,084	17,190	208,334	57,197	430,514	124,642
301	3.775	6.114	.387	.520	1.078	1.697	2.310	3.897	715,002	199,127	75,166	17,197	208,635	57,211	431,201	124,719
308	3.790	6.126	.388	.521	1.082	1.699	2.320	3.906	716,046	199,225	75,243	17,204	208,928	57,225	431,875	124,796
315	3.804	6.138	.389	.522	1.086	1.701	2.329	3.915	717,048	199,323	75,320	17,211	209,215	57,239	432,513	124,873
322	3.818	6.149	.390	.523	1.090	1.702	2.338	3.924	718,029	199,419	75,397	17,218	209,496	57,251	433,136	124,950
329	3.832	6.160	.391	.524	1.094	1.703	2.347	3.933	718,994	199,510	75,474	17,225	209,769	57,258	433,751	125,027
336	3.845	6.170	.392	.524	1.098	1.704	2.355	3.942	719,926	199,596	75,544	17,229	210,042	57,265	434,340	125,102
343	3.858	6.179	.393	.524	1.102	1.705	2.363	3.950	720,835	199,673	75,614	17,229	210,309	57,272	434,912	125,172
350	3.870	6.187	.394	.524	1.106	1.706	2.370	3.957	721,717	199,746	75,684	17,229	210,575	57,279	435,458	125,238
357	3.882	6.195	.395	.524	1.110	1.707	2.377	3.964	722,585	199,813	75,753	17,229	210,832	57,286	436,000	125,298
364	3.894	6.202	.396	.524	1.114	1.708	2.384	3.970	723,424	199,876	75,816	17,229	211,075	57,293	436,533	125,354
371	3.904	6.209	.397	.524	1.117	1.709	2.390	3.976	724,136	199,939	75,870	17,229	211,292	57,300	436,974	125,410
372	3.905	6.210	.397	.524	1.117	1.709	2.391	3.977	724,231	199,948	75,877	17,229	211,322	57,301	437,032	125,418

NOTE: The durations of all disabilities include the first 7 days of disability.

Moreover the figure reveals that the rates for females are consistently higher than the corresponding ones for males. With respect to the rate of increase of all sickness and nonindustrial injuries it appears that the disability rate for females increases more rapidly than for males, the same holding for the nonrespiratory group of causes and to a lesser degree for the respiratory group. The nonindustrial

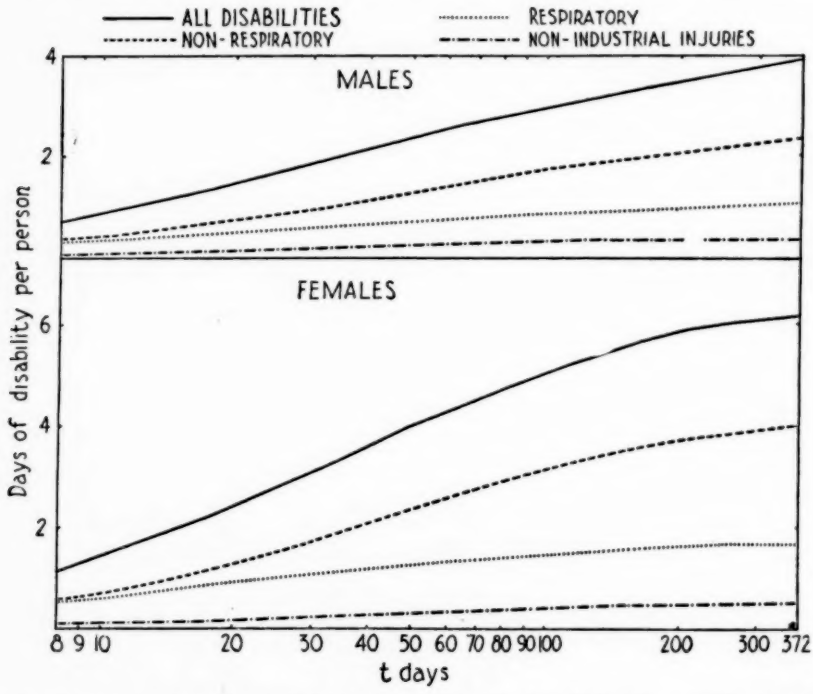


FIGURE 2.—Annual number of days of disability per person resulting from all disabilities contributing t days or less, experience of members of industrial sick benefit organizations, cases lasting 8 calendar days or longer due to sickness and nonindustrial injuries and ending during 1935–37, inclusive. (Logarithmic horizontal scale.)

injuries, on the other hand, show male and female disability rates that move approximately in parallel.

Of interest also is the fact that the male curve representing all sickness and nonindustrial injuries shows rates that approximate in magnitude the corresponding ones carried by the female curve of the nonrespiratory group, indicating that if the females suffered only nonrespiratory diseases their disability rates for different maximum benefit periods would approximate the corresponding disability rates covering all sickness and nonindustrial injuries among the males.

Further examination of figure 2 reveals that as the maximum benefit period becomes longer the difference between the rates for the nonrespiratory and respiratory groups becomes larger, the former, in the instance of the males, being twice the latter for a maximum

benefit period of 14 weeks; the corresponding maximum benefit period for the females is 9 weeks.

Finally, it will be observed that the extension of a maximum benefit period of 14 weeks to one of 53 weeks results in an increase of the disability rate for males and females of about 30 percent and less than 25 percent, respectively.

SUMMARY

This, the first of a series of papers on the duration of disabling sickness and nonindustrial injuries, based on cases lasting 8 days or longer, reported periodically by 25 industrial sick benefit organizations over a period of 3 years, presents principally 2 basic tables showing industrial morbidity by sex and broad cause group. One table gives the average annual number of cases per 1,000 persons causing disability for a specified number of days (t) or more, and the other, the average annual number of days of disability per person resulting from all disabilities contributing t days or less, the t in both instances varying from 8 through 372 days.

REFERENCES

(1) Keffer, R.: Group sickness and accident insurance. Trans. Actuarial Soc. Am., **28:** 5–34 (May 1927).
(2) Bassford, H. R.: Discussion of paper cited in reference *1*. Trans. Actuarial Soc. Am., **28:** 264–275 (October 1927).
(3) Fitzhugh, G. W.: Recent morbidity upon lives insured under group accident and health policies and premiums based thereon. Trans. Actuarial Soc. Am., **38:** 354–383 (October 1937).
(4) Sayers, R. R., Kroeger, Gertrud, and Gafafer, W. M.: General aspects and functions of the sick benefit organization. Pub. Health Rep., **52:** 1563–1580 (November 5, 1937).
(5) Gafafer, W. M.: Frequency of sickness and nonindustrial accidents causing disability lasting eight calendar days or longer among 60,000 white male railroad employees, 1930–34, inclusive. Pub. Health Rep., **53:** 555–573 (April 15, 1938).
(6) Gafafer, W. M.: The course of disabling morbidity among industrial workers, 1921–38. Indust. Med., **9:** 55–61 (February 1940).

RHEUMATIC FEVER IN NEW HAVEN, CONN.[1]

A SURVEY OF RECENT HOSPITAL ADMISSIONS

By Lucille R. Farquhar, M.D., *Research Assistant*, and John R. Paul, M.D., *Associate Professor of Medicine, Yale University School of Medicine*

This report is one of a series attempting to determine the prevalence of rheumatic fever and rheumatic heart disease in New Haven, Conn. These conditions are not reportable in New Haven (or for that matter in the majority of cities in the United States) and so it has been necessary to turn to another of the methods at present available for measuring their prevalence within a given community. Three of these other methods are: (*a*) Analyses of local hospital admission

[1] The expenses of this investigation were defrayed by a grant from the Milbank Memorial Fund.

rates for rheumatic fever (*1*, *2*); (*b*) determinations of the local prevalence of rheumatic heart disease in school children (*3*, *4*); and (*c*) analyses of local mortality statistics (*5*). None of them is ideal and it is probable that all three methods should be employed in one location, if it is desired to arrive at an estimate of their relative or composite worth. And it is with this particular end in mind that the first of these three methods has been applied in this study in the city of New Haven. The data thus obtained, besides being of some value in themselves, should supplement information on the prevalence of rheumatic heart disease which has been previously obtained among the school children in this city (*3*).

The use of hospital admission rates as a measure of the local frequency of one particular disease is an old procedure but not a very dependable one. Obviously it is more apt to be a measure of factors which bring patients to certain hospitals than a measure of local disease prevalence. But if several hospitals within a given area can be included in a survey of this type, the individual differences between different institutions may be partially ironed out, and the combined figures should at least give a fair estimate of that fraction of the total local cases of this disease which are hospitalized.

Such analyses as these, viz, of hospital admission rates for rheumatic fever, have been compiled on a national (or continental) scale by the Seegals (*2*), whose studies may serve as a precedent for this one. The Seegals collected data on the percentage of rheumatic fever patients admitted to the medical services of hospitals in widely separated regions in the United States and Canada, and they found widely differing results, ranging from 0.1 to 5.5 percent. The differences in these rates were probably significant from more than one standpoint; for, in keeping with the general experience, the higher rates came from the northern (45° to 34°) latitudes, and the lowest ones from the southern (29° to 34°) latitudes. On a geographical basis, therefore, we have a base line from these studies by the Seegals, to which the New Haven findings may be related. According to their estimates, the New Haven medical admission rate for rheumatic fever should be just under 2.0 percent.

METHODS

Our methods of obtaining data of this type will be reviewed in some detail because many variables enter the problem, and it may be important to know how they were handled.

Locale.—The city of New Haven [2] should be a fairly satisfactory

[2] This industrial and water-front city lies between the forty-first and forty-second parallel of north latitude. Its mean temperature is about 50° Fahrenheit; its normal annual precipitation is about 46 inches. Situated on sandy soil at an elevation of but a few feet above sea level, it is traversed by one river and several smaller water courses. The average population during the period covered by this study was about 163,500 for the city proper, and 240,000 for the metropolitan area, which includes the adjacent towns of West Haven, Hamden, East Haven, and North Haven.

community for a survey of hospital admissions, first, because of its size, and second, because, whatever the climatologic or sociologic conditions are which predispose to rheumatic fever, they must exist here, for not only is the disease common but it is extremely prevalent in some sections of the city.

Hospitals.—There are three large, general hospitals in the city of New Haven from which all the data for this study have been drawn. They are (1) the New Haven Hospital (a teaching institution associated with the Yale University School of Medicine) with a total annual admission rate for the period 1929 through 1938 of 6,400 to 9,300 in-patients; (2) the Grace Hospital with a similar rate ranging from 5,500 to 6,800; and (3) the Hospital of St. Raphael with a rate of 5,400 to 7,100. From 53 to 70 percent of the patients admitted to these three hospitals come from the city of New Haven, and from 69 to 86 percent come from the local metropolitan area. There are other "specialized hospitals" and smaller local institutions for the care of the sick in this city but they are probably insignificant from the standpoint of this study. There is also a hospital for children, with a special department for rheumatic fever patients; but as practically all such patients are referred there from one of the general hospitals, the admission rates of this last institution do not concern us in this study. The three general hospitals, which do concern us, take medical and pediatric patients, and have private and charity wards. The New Haven Hospital is the only one equipped with an isolation unit for contagious diseases.

Diagnostic criteria and examination of records.—An attempt was made to examine the records of all patients with active rheumatic fever and with inactive rheumatic heart disease from these three hospitals during the 10-year period 1929–38.[3] The first group, designated as "active rheumatic fever," includes patients diagnosed as having rheumatic fever, chorea, and active rheumatic heart disease, or various combinations of these three; the second group has been designated as "inactive rheumatic heart disease." The diagnoses made by each hospital were accepted in all but three or four instances, where they were recorded as questionable and seemed highly improbable. These cases were excluded.

Individual histories of all the rheumatic fever patients from the three hospitals were examined to determine whether or not the patient was a resident of New Haven at the time he was taken sick. The following details were also included for the active cases: The month of

[3] For permission to examine the hospital records we are indebted to Mr. James A. Hamilton, superintendent of the New Haven Hospital, Mr. Sidney Davidson, superintendent of the Grace Hospital, and Sister Elenita, superintendent of the Hospital of St. Raphael. The cooperation and invaluable assistance of Miss Marion Forsyth, record librarian of the New Haven Hospital, Mrs. Erma Black, librarian of the Grace Hospital, and Miss M. Dorothy Graham, librarian of the Hospital of St. Raphael, are gratefully acknowledged.

onset of the attack; the month of hospital admission; the precursor infection or condition; the type of attack, viz, first or recurrent; and the age of the patient. We were unsuccessful in obtaining data from all three hospitals for the 10-year period 1929–1938, since only data for the 6 years 1933–1938 were available from the Grace Hospital. A total of 526 histories of active rheumatic fever cases were examined. Of these, the place of residence was determined in 524, the month of onset was recorded for 525, the precursor infection or condition for 302; and the type of attack (whether first, second, or third, etc.) for 452.

Estimate of rheumatic fever hospital admission rates.—Admission rates were calculated on several bases but mainly on the total annual admissions to the medical services of each hospital (including pediatric and contagious services). This follows the precedent of the Seegals (*2*) for obtaining this type of data. This procedure was adopted by them so that the recorded frequency of rheumatic fever admissions in any given hospital would not be influenced by the presence or absence of large obstetrical or surgical services in one institution, as compared with smaller nonmedical services in others.

TABLE 1.—*Admission rates for rheumatic fever to 3 hospitals in New Haven for the 6-year period 1933–38, inclusive*

Hospital	Total admissions to all services (T. A.)	Total medical admissions (M. A.)	Active rheumatic fever			Inactive rheumatic heart disease		
			Number of cases	Rates		Number of cases	Rates	
				Percent of T. A.	Percent of M. A.		Percent of T. A.	Percent of M. A.
New Haven	50,526	12,808	259	0.51	2.02	355	0.70	2.77
Grace	37,022	5,961	63	.17	1.05	123	.30	2.06
St. Raphael's	37,242	11,833	25	.06	.21	41	.11	.34

As an illustration of the manner in which the local hospitals differed in this respect, it is found that the active rheumatic fever rates are from three to six times lower if estimated on the basis of total hospital admissions (T. A.) rather than on the basis of medical admissions alone (M. A.). (See table 1.) In other words the ratio of nonmedical to medical patients is about twice as large in some hospitals as it is in others. But even if rates are estimated from the medical admissions alone, it is obvious that there will still be wide differences between individual hospitals. Such differences may be due to the individual equipment or facilities of each hospital, and in this respect the proportion of children in the hospital population (or the size of the pediatric service) is important. Furthermore the clinical interests of individual members of the medical staffs of the hospitals probably determine the frequency with which the diagnosis of rheumatic fever

and rheumatic heart disease is made. Thus, it is also shown in table 1 that the New Haven Hospital rates for active rheumatic fever are from 8 to 10 times those of the Hospital of St. Raphael. It should be emphasized, however, that the New Haven Hospital and Dispensary maintain two special clinics for rheumatic fever patients. It can be seen that an erroneous impression might be gained if the figures from a single institution were taken as a measure of the local frequency of rheumatic fever.

Estimate of rates for the city proper.—Although these three hospitals draw the great majority of their patients from a region which is within a radius of 25 miles of New Haven, and which more or less represents New Haven County, it is obvious that the *hospital rates* which appear in table 1 are only roughly applicable to the local county.[4] The situation can be covered by the broad statement that from 69 to 86 percent of the rheumatic fever patients admitted to the three local hospitals came from greater New Haven, that is, from an area which lies within 6 to 12 miles of the center of the city. However, actual rates from the city proper were determined as follows: All patients with active rheumatic fever who lived in the city were picked out from the lists in each hospital. (See column designated R. F.–N. H., table 2.) The total number of patients from the city proper who were admitted to the medical services of each hospital was then estimated. (See column designated M. A.–N. H., table 2.) From these two figures the annual *city rates* were estimated.

Primary or recurrent attacks.—As rheumatic fever is essentially a chronic or relapsing disease, it is obvious that a record of hospital admissions for the active cases does not give a correct picture of individual case incidence. In this respect hospital admission rates for rheumatic fever are perhaps comparable to those of tuberculosis, in distinction to those which might be obtained for measles. It has been stated that there were 452 active cases from which the attack rate was determined. Of these, 214 (47 percent) were admitted during the first attack, 149 (33 percent) during the second, and 56 (12 percent) during the third attack. The accuracy of these determinations may, however, be questioned because it is notoriously difficult to determine the "type" of attack from a study of hospital records. Many patients who enter a hospital with rheumatic fever at the age of 17 or 18 may give a questionable history of growing pains at the age of 8 or 10, but whether or not this should be interpreted as meaning that the symptoms in childhood actually represent the first attack of rheumatic fever is often difficult to decide. Certainly many "first attacks" of this disease give rise to very little in the way of recognizable symptomatology. In our own dispensary series of patients with rheumatic

[4] As an example of how a hospital rate may not necessarily reflect the rate of the local community, the Mayo Clinic might be mentioned.

heart disease (in the age group 5 to 20 years) 25 percent failed to give any history of an attack of active rheumatic fever prior to the time at which the "old" cardiac lesion was first detected. In the light of this situation it seems reasonable to group all active rheumatic fever cases together, with the realization that probably half of them represent recurrent attacks and a certain percentage of the latter group are readmissions so that the same patient is occasionally counted two or more times. In any event it should be emphasized that the final number of "cases" actually represents the number of admissions for active or inactive rheumatic fever, and not the individual number of patients. The figures are compiled in this manner for the sake of conformity with other series.

RESULTS

Annual admission rates for active rheumatic fever, computed by the methods just described, are listed in the last three columns of table 2. They represent (1) the percentage of rheumatic fever admissions (active cases) to the medical services of the local hospitals during this 10-year period, viz, the "hospital rates," and (2) the percentage of active case admissions from the city alone, viz, the "city rates." The average of these two rates for active cases is almost the same, about 1.2 percent.[5] Fluctuations in the admission rates of active cases occur from year to year, ranging from 0.7 to 1.7 percent. To emphasize this, the rates have also been presented in the form of graphs (fig. 1). In spite of wide annual differences, however, no particular trends are apparent, and it cannot be said that this type of analysis reveals evidence that the disease is on the increase or decrease in New Haven.

The total admissions for both active and inactive rheumatic fever make up 2.7 percent of all admissions to the medical services of the three local hospitals. It is important to know how this compares with other common diseases from this locality, or in other words to estimate the relative size of the local rheumatic fever problem insofar as hospital admissions are concerned. For this comparison we have selected some of the diseases which were chosen by Hedley (*5*) for his comparison of rheumatic fever mortality rates with those of other diseases. Hedley chose two chronic infectious diseases, tuberculosis and syphilis, and a number of acute infectious diseases, including scarlet fever, diphtheria, acute poliomyelitis, measles, and pertussis. For our comparison, data were obtained from the New Haven Hospital alone, because the other two local hospitals do not have infectious disease services.

[5] This figure (1.2 percent) is well below the rate of 1.9 percent which might have been predicted on the basis of the Seegals' data (*2*). If calculated from the St. Raphael's Hospital data alone, it would have been about 0.2 percent, and if calculated from the New Haven Hospital data alone it would have been about equal to the predicted rate of 1.9 percent.

TABLE 2.—*Data from the three hospitals*

Year	Hospital	Number of admissions						Hospital admissions			Admission rates		
		For total hospital population					From New Haven				Percent of—		
		Rheumatic Fever	Chorea	Rheumatic heart disease		Total active (R. F.)	Active R. F. (R. F.-N. H.)	Total (T. A.)	To medical services (M. A.)	M. A. from city of New Haven (M. A.-N. H.)	M. A. which are active R. F. cases	M. A. which are inactive R. F. cases	M. A. N. H. which are active R. F.-N. H. cases
				Active	Inactive								
1929	N. H. H.	5	1	24	23	.....	.....	6,429	1,760	1,074	.....	.....	.....
	Grace					.....	.....	6,255			.....	.....	.....
	St. R.	4	0	0	0	.....	.....	5,428	1,690	1,149	.....	.....	.....
	Total	9	1	24	23	34	17	.....	3,450	2,223	0.98	0.67	0.76
1930	N. H. H.	7	8	28	43	.....	.....	6,580	1,721	1,050	.....	.....	.....
	Grace					.....	.....	6,442			.....	.....	.....
	St. R.	3	1	3	4	.....	.....	5,812	1,813	1,233	.....	.....	.....
	Total	10	9	31	47	49	28	.....	3,534	2,287	1.38	1.33	1.22
1931	N. H. H.	19	6	26	65	.....	.....	6,779	1,935	1,161	.....	.....	.....
	Grace					.....	.....	6,146			.....	.....	.....
	St. R.	2	0	.....	1	.....	.....	5,957	1,910	1,319	.....	.....	.....
	Total	21	6	26	66	53	33	.....	3,845	2,480	1.37	1.71	1.33
1932	N. H. H.	13	2	24	45	.....	.....	7,555	2,239	1,221	.....	.....	.....
	Grace					.....	.....	5,393			.....	.....	.....
	St. R.	2	0	1	1	.....	.....	6,129	1,607	1,093	.....	.....	.....
	Total	15	2	25	46	42	29	.....	3,846	2,314	1.09	1.19	1.25
1933	N. H. H.	23	8	33	52	.....	.....	7,416	1,833	1,178	.....	.....	.....
	Grace	6	0	7	11	.....	.....	5,543	888	684	.....	.....	.....
	St. R.	0	0	1	3	.....	.....	5,739	1,680	1,142	.....	.....	.....
	Total	29	8	41	66	78	48	.....	4,401	3,004	1.77	1.49	1.59
1934	N. H. H.	7	0	21	70	.....	.....	7,042	1,986	1,211	.....	.....	.....
	Grace	1	0	3	24	.....	.....	5,724	860	568	.....	.....	.....
	St. R.	0	0	2	11	.....	.....	5,632	1,803	1,226	.....	.....	.....
	Total	8	0	26	105	34	24	.....	4,649	3,005	.73	2.25	.79
1935	N. H. H.	17	5	24	79	.....	.....	8,686	2,125	1,211	.....	.....	.....
	Grace	4	0	6	21	.....	.....	6,290	879	599	.....	.....	.....
	St. R.	1	9	2	3	.....	.....	5,735	1,987	1,351	.....	.....	.....
	Total	22	5	32	103	59	40	.....	4,991	3,161	1.18	2.06	1.58
1936	N. H. H.	12	0	24	63	.....	.....	8,860	2,075	1,120	.....	.....	.....
	Grace	4	0	7	16	.....	.....	5,944	1,039	717	.....	.....	.....
	St. R.	6	0	2	4	.....	.....	6,175	1,933	1,314	.....	.....	.....
	Total	22	0	33	83	55	37	.....	5,047	3,151	1.11	1.64	1.11
1937	N. H. H.	5	2	35	49	.....	.....	9,164	2,344	1,265	.....	.....	.....
	Grace	2	0	11	17	.....	.....	6,699	1,118	760	.....	.....	.....
	St. R.	0	0	5	7	.....	.....	6,815	2,153	1,464	.....	.....	.....
	Total	7	2	51	73	60	48	.....	5,615	3,489	1.06	1.30	1.38
1938	N. H. H.	7	2	34	42	.....	.....	9,358	2,444	1,295	.....	.....	.....
	Grace	4	0	8	34	.....	.....	6,822	1,177	824	.....	.....	.....
	St. R.	1	0	5	13	.....	.....	7,144	2,177	1,480	.....	.....	.....
	Total	12	2	47	89	61	37	.....	5,798	3,599	1.22	1.53	1.03
Grand total		155	35	336	701	526	341	199,689	.....	.....	.....	.....	.....
Average per year		.....	.....	.....	.....	.....	.....	.....	.....	.....	1.19	1.52	1.20

[1] Percentages are computed from 2 of the hospitals for the years 1929 through 1932 and from all 3 hospitals for the years 1933 through 1938.

The purpose of this comparison (fig. 2) is to demonstrate the relative position occupied by rheumatic fever (both active and inactive)

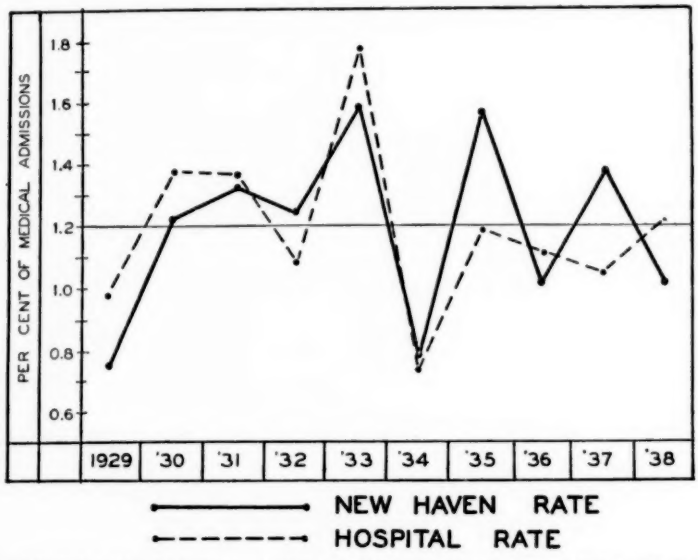


FIGURE 1.—Admission rates for active cases of rheumatic fever to three local hospitals for the 6-year period 1933–38, and to two hospitals for the 4-year period 1929–32. The hospital rate represents annual admissions for cases, computed from the total annual admissions to the medical services; the New Haven rate represents city cases alone, computed from total medical admissions from the city alone. The horizontal line across the graph indicates the average of both the hospital and city rates.

among some of the chronic and acute infectious diseases insofar as admissions to one of the local hospitals are concerned. This chart

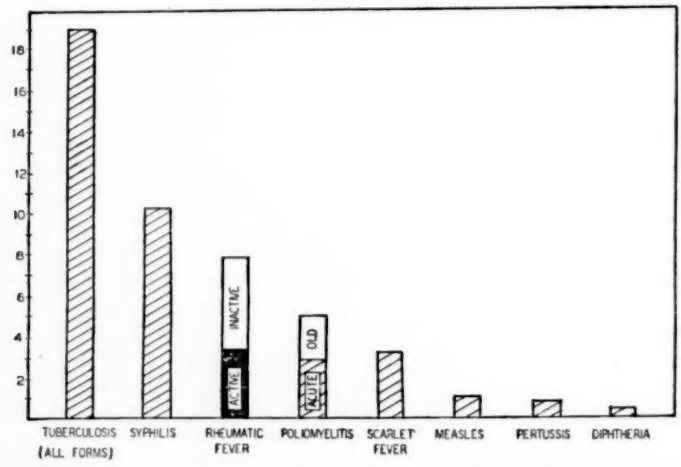


FIGURE 2.—Rates at which cases representing 8 different chronic and acute infectious diseases were admitted to the New Haven Hospital during the period 1929–38, inclusive.

is not a demonstration of relative local disease frequency. The height of each column in figure 2, indicating the numbers of ad-

missions for each disease to the medical services of the New Haven Hospital, is rather a rough measure of the relative "severity" of each of these diseases in this locality. The important position occupied by rheumatic fever among the other infectious diseases is obvious.

DISCUSSION

Having ascertained that (*a*) the average number of hospitalized cases of active rheumatic fever on a 6-year basis in the city of New Haven is 40 per year (a case rate of 29 per 100,000), and (*b*) that these patients make up 1.2 percent of the admissions to the medical services of the three hospitals in this city, the next point is to see what these figures mean. From the onset it is granted that the hospital admission figures for this disease represent a limited measure of its local prevalence, for even if all the local cases of rheumatic fever were diagnosed, it is obvious that only a fraction of the diagnosed cases would be hospitalized. And yet, by and large, the hospital figures for the city are probably as accurate a relative measure of local prevalence of rheumatic fever as those which might be obtained if this disease were a reportable one here.[6] The future alone can verify this statement.

Although the data are not an accurate index of prevalence, they may be a partial index of the local "severity" of the disease insofar as certain other chronic and acute infectious diseases are concerned. This relative measure of severity has been expressed in figure 2 as a measure of the numerical extent to which local physicians use the New Haven Hospital for these particular diseases. With acute poliomyelitis (which occupies an important place in this graph because of the epidemic of 1931) this usage of the hospital becomes a rough measure of the prevalence of recognized cases, because such a large percentage of the local cases of acute poliomyelitis were hospitalized during this period; with measles and pertussis, on the other hand, it is not a measure of local prevalence at all. With rheumatic fever the height of the column in figure 2 probably measures the combined factors of local prevalence and local "severity."

This measure of the annual number of local hospitalized cases of rheumatic fever can also be considered in the light of the prevalence of rheumatic heart disease among the local school children. The latter determination was made in 1933 (*3*) among two large groups of New Haven school children. Among them the rheumatic heart disease rate was found to range from 1.4 to 3.4 percent. We have no way of actually relating this local prevalence of "old" rheumatic heart disease in the school children to the local hospital admission rates for

[6] From a sickness survey conducted in 1926 in Hagerstown, Md., where the local physicians were aware that their "work was being checked," Sydenstricker (*6*) found that 85 percent of the cases of diphtheria, scarlet fever, and influenza were reported, 60 percent of the cases of pneumonia, 30 to 40 percent of measles, whooping cough, and chickenpox, and practically no cases of scabies (*6*).

active cases of rheumatic fever. There are too many unknown factors in this relationship and, as has already been mentioned, not the least among them is the fact that about 25 percent of the local patients with old rheumatic heart disease fail to give a history of ever having had rheumatic fever. But it is of value to know what the observed hospital rate is, in an area where the observed juvenile cardiac rate has also been recorded; and we believe that both figures should be quoted if the local picture of the disease is to be adequate.

Thus, several measures of the prevalence of the disease and of its severity, each one perhaps indicating a different phase of the problem, have been mentioned here. The relative significance of these various measures can best be appreciated when similar comparisons are available from other localities.

SUMMARY

1. Data relative to rheumatic fever have been collected from all of the three general hospitals in the city of New Haven, Conn., and from these data estimates have been made on the annual number of active and inactive cases of rheumatic fever admitted to these institutions.

2. The average number of hospitalized cases of active rheumatic fever in the city of New Haven is 40 per year (an annual case rate of 29 per 100,000).

3. The active cases make up 1.2 percent of the admisssions to the medical services of local hospitals, and the inactive rheumatic heart disease cases make up an additional 1.5 percent of these admissions.

4. From the standpoint of total admissions to the medical service of the New Haven Hospital this disease occupies a position of numerical importance which is greater than that of other acute infectious diseases, such as poliomyelitis, scarlet fever, measles, pertussis, and diphtheria, but less than that of the two major chronic infectious diseases, tuberculosis and syphilis.

5. We now have two rough measures of the prevalence and of the severity of this disease in this community. Their relative significance can be best appreciated when comparisons are eventually available from other localities.

REFERENCES

(*1*) Seegal, D., and Seegal, B. C.: Studies on the epidemiology of rheumatic fever. Annual incidence in some hospitals in the United States, its possessions, and Canada. J. Am. Med. Assoc., **89**: 11 (1927).

(*2*) Seegal, D., Seegal, B. C., and Jost, E. L.: Comparative study of the geographic distribution of rheumatic fever, scarlet fever, and acute glomerulonephritis in North America. Am. J. Med. Sci., **190**: 383 (1935).

(*3*) Paul, J. R., Harrison, E. R., Salinger, R., and DeForest, G. K.: The social incidence of rheumatic heart disease. A statistical study in New Haven school children. Am. J. Med. Sci., **188**: 301 (1934).

(*4*) Paul, J. R., and Dixon, G. L.: Climate and rheumatic heart disease. A survey among American Indian school children in northern and southern localities. J. Am. Med. Assoc., **108**: 2096 (1937).

(5) Hedley, O. F.: Mortality from rheumatic heart disease in Philadelphia during 1936. Pub. Health Rep., **52**: 1907 (1937).
(6) Sydenstricker, E.: A study of illness in a general population group. Pub. Health Rep., **41**: 2069 (1926) and subsequent issues.

PRELIMINARY 1940 POPULATION FIGURES FOR THE UNITED STATES, BY STATES

The population of the United States on April 1, 1940, was 131,409,881, according to a preliminary count based on returns of the 1940 census, as announced by the Bureau of the Census, Department of Commerce. As compared with the 1930 population of 122,775,046, there was an increase of 8,634,835 between 1930 and 1940, or 7 percent, as compared with an increase of 16.1 percent during the period 1920–30. The rate of increase in the last decade is less than one-half that shown in any previous decade since the first census in 1790. This slackening in population growth is stated to be due to the declining birth rate and the virtual cessation of immigration from foreign countries.

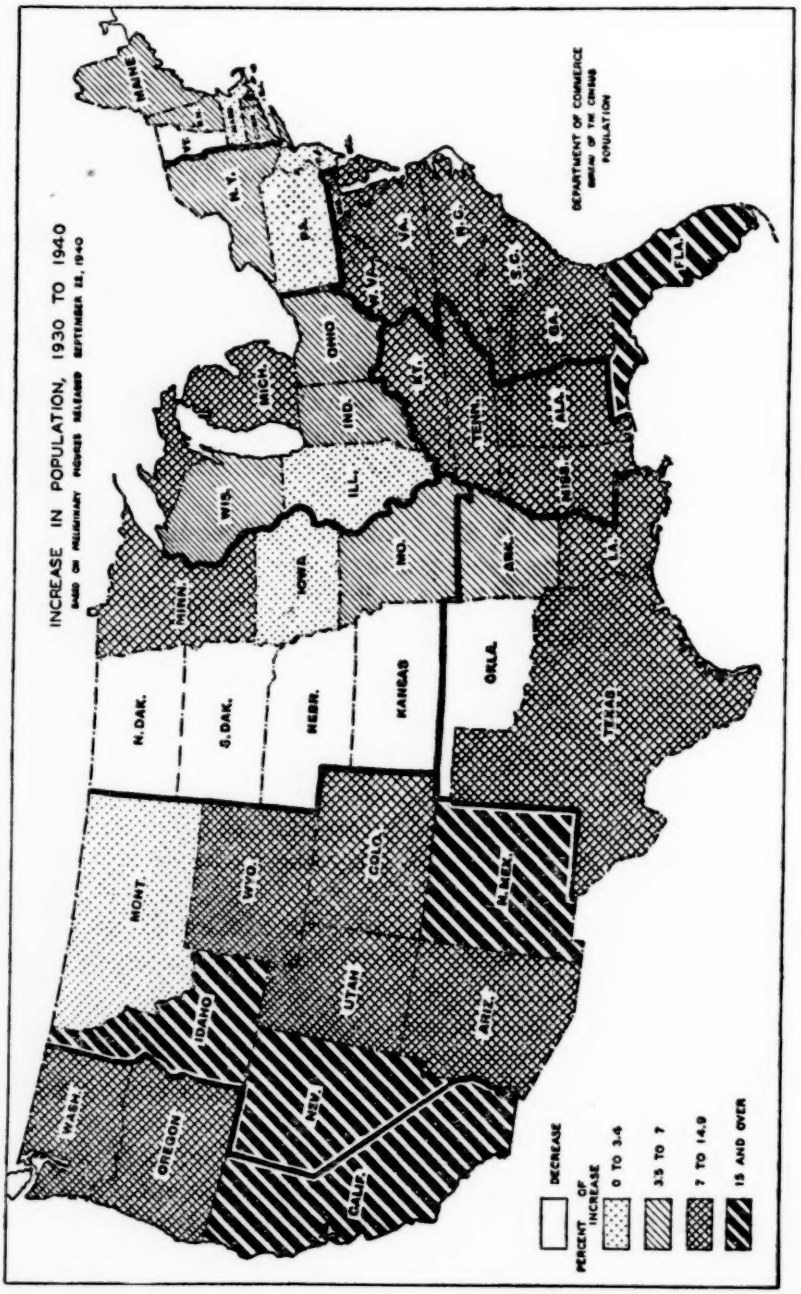
Classed with the States, the District of Columbia recorded the highest increase, 36.2 percent; but excluding this area, Florida, with an increase in population of 27.9 percent, led the other States, followed by New Mexico, with 24.9 percent, and California, with 21.1 percent. Six States, namely, Kansas, Nebraska, North Dakota, Oklahoma, South Dakota, and Vermont, decreased in population between 1930 and 1940. The first five of these States are located in the Great Plains and are included in the so-called "dust bowl" area, extending from the Canadian border to Texas. In no previous decade have more than three States decreased in population. Montana reversed its decline in the 1920–30 period, recording an increase in the later decade, and 11 States (Delaware, Georgia, Idaho, Kentucky, Maine, Minnesota, Nevada, New Hampshire, New Mexico, South Carolina, and Virginia) and the District of Columbia increased more rapidly in the later decennium than in the preceding one.

In absolute figures, the increase in California exceeded that of any other State (1,196,437 as compared with 791,556 for New York, the next largest increase), while in seven other States the increase exceeded 250,000.

The 1940 population census indicates several changes in the relative population rank of States since 1930; but the displacement of Texas by California in fifth place was the only change in the first 10 States with the largest populations.

Table 1 shows the population data by geographic divisions and the States included in those divisions. It should be noted that the total for the United States includes 125,000 not assigned by States. This

is an estimated allowance for supplemental figures which could not be allotted to the various States.



It may be noted that all of the northern States, that is, the first four of the geographic divisions in table 1, which had nearly 60 percent of

TABLE 1.—*Summary of preliminary population figures for the United States, 1940*

[A minus sign (−) denotes decrease]

Division and State	Population		Increase 1930–1940	Percent of increase	
	1940	1930		1930–1940	1920–1930
United States total, including allowance for supplementals	131,409,881	122,775,046	8,634,835	7.0	16.1
Estimated allowance for supplementals not distributed by States	125,000				
Total of State figures	131,284,881	122,775,046	8,509,835	6.9	16.1
Geographic divisions:					
New England	8,426,566	8,166,341	260,225	3.2	10.3
Middle Atlantic	27,419,893	26,260,750	1,159,143	4.4	18.0
East North Central	26,550,823	25,297,185	1,253,638	5.0	17.8
West North Central	13,490,492	13,296,915	193,577	1.5	6.0
South Atlantic	17,771,099	15,793,589	1,977,510	12.5	12.9
East South Central	10,762,967	9,887,214	875,753	8.9	11.2
West South Central	13,052,218	12,176,830	875,388	7.2	18.9
Mountain	4,128,042	3,701,789	426,253	11.5	11.0
Pacific	9,682,781	8,194,433	1,488,348	18.2	47.2
New England:					
Maine	845,139	797,423	47,716	6.0	3.8
New Hampshire	489,716	465,293	24,423	5.2	5.0
Vermont	357,598	359,611	−2,013	−0.6	2.0
Massachusetts	4,312,332	4,249,614	62,718	1.5	10.3
Rhode Island	711,669	687,497	24,172	3.5	13.7
Connecticut	1,710,112	1,606,903	103,209	6.4	16.4
Middle Atlantic:					
New York	13,379,622	12,588,066	791,556	6.3	21.2
New Jersey	4,148,562	4,041,334	107,228	2.7	28.1
Pennsylvania	9,891,709	9,631,350	260,359	2.7	10.5
East North Central:					
Ohio	6,889,623	6,646,697	242,926	3.7	15.4
Indiana	3,416,152	3,238,503	177,649	5.5	10.5
Illinois	7,874,155	7,630,654	243,501	3.2	17.7
Michigan	5,245,012	4,842,325	402,687	8.3	32.0
Wisconsin	3,125,881	2,939,006	186,875	6.4	11.7
West North Central:					
Minnesota	2,785,896	2,563,953	221,943	8.7	7.4
Iowa	2,535,430	2,470,939	64,491	2.6	2.8
Missouri	3,775,737	3,629,367	146,370	4.0	6.6
North Dakota	639,690	680,845	−41,155	−6.0	5.3
South Dakota	641,134	692,849	−51,715	−7.5	8.8
Nebraska	1,313,468	1,377,963	−64,495	−4.7	6.3
Kansas	1,799,137	1,880,999	−81,862	−4.4	6.3
South Atlantic:					
Delaware	264,603	238,380	26,223	11.0	6.9
Maryland	1,811,546	1,631,526	180,020	11.0	12.5
District of Columbia	663,153	486,869	176,284	36.2	11.3
Virginia	2,664,847	2,421,851	242,996	10.0	4.9
West Virginia	1,900,217	1,729,205	171,012	9.9	18.1
North Carolina	3,563,174	3,170,276	392,898	12.4	23.9
South Carolina	1,905,815	1,738,765	167,050	9.6	3.3
Georgia	3,119,953	2,908,506	211,447	7.3	0.4
Florida	1,877,791	1,468,211	409,580	27.9	51.6
East South Central:					
Kentucky	2,839,927	2,614,589	225,338	8.6	8.2
Tennessee	2,910,992	2,616,556	294,436	11.3	11.9
Alabama	2,830,285	2,646,248	184,037	7.0	12.7
Mississippi	2,181,763	2,009,821	171,942	8.6	12.2
West South Central:					
Arkansas	1,948,268	1,854,482	93,786	5.1	5.8
Louisiana	2,355,821	2,101,593	254,228	12.1	16.9
Oklahoma	2,329,808	2,396,040	−66,232	−2.8	18.1
Texas	6,418,321	5,824,715	593,606	10.2	24.9
Mountain:					
Montana	554,136	537,606	16,530	3.1	−2.1
Idaho	523,440	445,032	78,408	17.6	3.0
Wyoming	246,763	225,565	21,198	9.4	16.0
Colorado	1,118,820	1,035,791	83,029	8.0	10.2
New Mexico	528,687	423,317	105,370	24.9	17.5
Arizona	497,789	435,573	62,216	14.3	30.3
Utah	548,393	507,847	40,546	8.0	13.0
Nevada	110,014	91,058	18,956	20.8	17.6
Pacific:					
Washington	1,721,376	1,563,396	157,980	10.1	15.2
Oregon	1,087,717	953,786	133,931	14.0	21.8
California	6,873,688	5,677,251	1,196,437	21.1	65.7

the population in 1930, contribute only about one-third of the increase in the later decade. The southern States, however, comprising the next three geographic divisions shown in table 1, which had less than 31 percent of the 1930 population, show nearly 44 percent of the increase; and the western States, comprising the Mountain and Pacific divisions, with less than 10 percent of the 1930 population, contribute more than 22 percent of the increase.

Practically all of the industrial States recorded a rate of increase less than the national average. Even omitting the "dust bowl" States, the four northern divisions show a smaller percentage of the increase than the percentage of the total population in either 1930 or 1940. The relatively more rapid increase in the southern States is explained in part by higher birth rates and the fact that a larger proportion of their population increase probably remained within these States than in recent previous decades. The increase on the Pacific coast, it is stated, probably represents the continued settlement and development of new territory, while the rapid increase of the populations of California and Florida is presumably attributed principally to the tendency of certain classes of population to migrate to a warmer climate. The increase in the Mountain States may have been affected by the same factor suggested for the southern States and by migrations from the "dust bowl" States.

TABLE 2.—*Relative rank of States according to population, 1940 and 1930*

State	Rank		Population		State	Rank		Population	
	1940	1930	1940	1930		1940	1930	1940	1930
New York	1	1	13,379,622	12,588,066	West Virginia	26	27	1,900,217	1,729,205
Pennsylvania	2	2	9,891,709	9,631,350	Florida	27	31	1,877,791	1,468,211
Illinois	3	3	7,874,155	7,630,654	Maryland	28	28	1,811,546	1,631,526
Ohio	4	4	6,889,623	6,646,697	Kansas	29	24	1,799,137	1,880,999
California	5	6	6,873,688	5,677,251	Washington	30	30	1,721,376	1,563,396
Texas	6	5	6,418,321	5,824,715	Connecticut	31	29	1,710,112	1,606,903
Michigan	7	7	5,245,012	4,842,325	Nebraska	32	32	1,313,468	1,377,963
Massachusetts	8	8	4,312,332	4,249,614	Colorado	33	33	1,118,820	1,035,791
New Jersey	9	9	4,148,562	4,041,334	Oregon	34	34	1,087,717	953,786
Missouri	10	10	3,775,737	3,629,367	Maine	35	35	845,139	797,423
North Carolina	11	12	3,563,174	3,170,276	Rhode Island	36	37	711,669	687,497
Indiana	12	11	3,416,152	3,238,503	Dist. of Columbia	37	41	663,153	486,869
Wisconsin	13	13	3,125,881	2,939,006	South Dakota	38	36	641,134	692,849
Georgia	14	14	3,119,953	2,908,506	North Dakota	39	38	639,690	680,845
Tennessee	15	16	2,910,992	2,616,556	Montana	40	39	554,136	537,606
Kentucky	16	17	2,839,927	2,614,589	Utah	41	40	548,393	507,847
Alabama	17	15	2,830,285	2,646,248	New Mexico	42	45	528,687	423,317
Minnesota	18	18	2,785,896	2,563,953	Idaho	43	43	523,440	445,032
Virginia	19	20	2,664,847	2,421,851	Arizona	44	44	497,789	435,573
Iowa	20	19	2,535,430	2,470,939	New Hampshire	45	42	489,716	465,293
Louisiana	21	22	2,355,821	2,101,593	Vermont	46	46	357,598	359,611
Oklahoma	22	21	2,329,808	2,396,040	Delaware	47	47	264,603	238,380
Mississippi	23	23	2,181,763	2,009,821	Wyoming	48	48	246,763	225,565
Arkansas	24	25	1,948,268	1,854,482	Nevada	49	49	110,014	91,058
South Carolina	25	26	1,905,815	1,738,765					

In table 2 the States are arranged according to relative population rank in 1940, with their relative position in 1930 also shown, and table 3 presents them in the order of percentage increase during the last decade.

TABLE 3.—*States in order of percentage of increase, 1930 to 1940*

State	Percent increase [1]	State	Percent increase	State	Percent increase
Continental United States	6.9	16. Virginia	10.0	33. New Hampshire	5.2
		17. West Virginia	9.9	34. Arkansas	5.1
		18. South Carolina	9.6	35. Missouri	4.0
1. Dist. of Columbia	36.2	19. Wyoming	9.4		
2. Florida	27.9	20. Minnesota	8.7	36. Ohio	3.7
3. New Mexico	24.9			37. Rhode Island	3.5
4. California	21.1	21. Kentucky	8.6	38. Illinois	3.2
5. Nevada	20.8	22. Mississippi	8.6	39. Montana	3.1
		23. Michigan	8.3	40. Pennsylvania	2.7
6. Idaho	17.6	24. Colorado	8.0		
7. Arizona	14.3	25. Utah	8.0	41. New Jersey	2.7
8. Oregon	14.0			42. Iowa	2.6
9. North Carolina	12.4	26. Georgia	7.3	43. Massachusetts	1.5
10. Louisiana	12.1	27. Alabama	7.0	44. Vermont	−0.6
		28. Connecticut	6.4	45. Oklahoma	−2.8
11. Tennessee	11.3	29. Wisconsin	6.4		
12. Maryland	11.0	30. New York	6.3	46. Kansas	−4.4
13. Delaware	11.0			47. Nebraska	−4.7
14. Texas	10.2	31. Maine	6.0	48. North Dakota	−6.0
15. Washington	10.1	32. Indiana	5.5	49. South Dakota	−7.5

[1] A minus sign (−) denotes decrease.

All of the 1940 figures here presented are based on counts made in the field by the local supervisors and are subject to revision when the final count of the census returns is completed in Washington. The Bureau of the Census states that final population figures are now being released State by State, and that the final figures for the United States on this basis will probably be available about the middle of November.

While it may be advisable to wait for the final counts for the compilation of morbidity and other rates based on population, in view of the fact that they will soon be available, the changes will probably not be sufficiently large to affect materially rates computed on the basis of these preliminary figures.

PRELIMINARY 1940 CENSUS FIGURES FOR CITIES OF 100,000 OR MORE POPULATION

The Bureau of the Census announces that, according to preliminary figures, on April 1, 1940, there were 37,837,296 persons in the United States living in cities of 100,000 or more population, as compared with 36,195,171 in 1930. This represents an increase in the population of cities of this size of 4.5 percent during the decade 1930–40, as compared with an increase of 23.6 percent during the preceding decennium and with an increase of 7 percent in the total population of the United States between 1930 and 1940.

In 1940 there were 92 cities with 100,000 or more inhabitants, 1 less than the number of such cities in 1930. Sacramento, Calif., and

Charlotte, N. C., were included in this group for the first time, while El Paso, Tex., Lynn, Mass., and Evansville, Ind., dropped below 100,000 population.[1]

The most rapid growth in population between 1930 and 1940 occurred in Miami, Fla., which increased by 54.4 percent, followed by San Diego, Calif. (36.5 percent), and Washington, D. C. (36.2 percent). It was stated that no city in the northeast area of the United States was in the list of the most rapidly growing cities of 100,000 or more population.

Twenty-nine of the cities in this group lost in population between 1930 and 1940, as compared with only 4 showing a decrease between 1920 and 1930. Three cities, namely, Fall River and Lowell, Mass., and Wilmington, Del., reversed declines in the 1920–30 period and registered slight increases in the later decade, while only one city, Washington, D. C., increased in population more rapidly between 1930 and 1940 than between 1920 and 1930.

The 1940 figures are based on counts made by the local supervisors and are subject to revision on final counts at the Bureau of the Census. As the relative standing of these cities, with respect to population, is not likely to be altered by the final figures (with some possible exceptions, such as the decision with respect to annexed area in Evansville, Ind.), the list is presented in the accompanying table for convenience in making comparisons of populations and of the changes in the two decades.

Preliminary populations of cities having, in 1940, 100,000 inhabitants or more, arranged according to rank

[A minus sign (−) denotes decrease]

Rank		City	Population		Increase, 1930–1940	Percent of increase	
1940	1930		1940	1930		1930–40	1920–30
1	1	New York, N. Y	7,380,259	6,930,446	449,813	6.5	23.3
2	2	Chicago, Ill	3,384,556	3,376,438	8,118	0.2	25.0
3	3	Philadelphia, Pa	1,935,086	1,950,961	−15,875	−0.8	7.0
4	4	Detroit, Mich	1,618,549	1,568,662	49,887	3.2	57.9
5	5	Los Angeles, Calif	1,496,792	1,238,048	258,744	20.9	114.7
6	6	Cleveland, Ohio	878,385	900,429	−22,044	−2.4	13.0
7	8	Baltimore, Md	854,144	804,874	49,270	6.1	9.7
8	7	St. Louis, Mo	813,748	821,960	−8,212	−1.0	6.3
9	9	Boston, Mass	769,520	781,188	−11,668	−1.5	4.4
10	10	Pittsburgh, Pa	665,384	669,817	−4,433	−0.7	13.8
11	14	Washington, D. C	663,153	486,869	176,284	36.2	11.3
12	11	San Francisco, Calif	629,553	634,394	−4,841	−0.8	25.2
13	12	Milwaukee, Wis	589,578	578,249	11,309	2.0	26.5
14	13	Buffalo, N. Y	575,150	573,076	2,074	0.4	13.1
15	16	New Orleans, La	492,282	458,762	33,520	7.3	18.5
16	15	Minneapolis, Minn	489,971	464,356	25,615	5.5	22.0
17	17	Cincinnati, Ohio	452,852	451,160	1,692	0.4	12.4
18	18	Newark, N. J	428,236	442,337	−14,101	−3.2	6.7
19	19	Kansas City, Mo	400,175	399,746	429	0.1	23.2
20	21	Indianapolis, Ind	386,170	364,161	22,009	6.0	15.9
21	26	Houston, Tex	386,150	292,352	93,798	32.1	111.4
22	20	Seattle, Wash	366,847	365,583	1,264	0.3	15.9
23	22	Rochester, N. Y	324,694	328,132	−3,438	−1.0	10.9
24	24	Louisville, Ky	318,713	307,745	10,968	3.6	31.0
25	29	Denver, Colo	318,415	287,861	30,554	10.6	12.2

[1] The population of Evansville, previously given as 111,034, included an area thought to be annexed, but regarding which court action is pending.

Preliminary populations of cities having, in 1940, 100,000 inhabitants or more, arranged according to rank—Continued

[A minus sign (−) denotes decrease]

Rank		City	Population		Increase, 1930–1940	Percent of increase	
1940	1930		1940	1930		1930–40	1920–30
26	25	Portland, Oreg	307,572	301,815	5,757	1.9	16.9
27	28	Columbus, Ohio	304,936	290,564	14,372	4.9	22.6
28	30	Oakland, Calif	304,909	284,063	20,846	7.3	31.4
29	32	Atlanta, Ga	302,538	270,366	32,172	11.9	34.8
30	23	Jersey City, N. J	301,012	316,715	−15,703	−5.0	6.2
31	33	Dallas, Tex	293,306	260,475	32,831	12.6	63.8
32	36	Memphis, Tenn	291,312	253,143	38,169	15.1	55.9
33	31	St. Paul, Minn	288,023	271,606	16,417	6.0	15.7
34	27	Toledo, Ohio	281,096	290,718	−9,622	−3.3	19.6
35	34	Birmingham, Ala	264,151	259,678	4,473	1.7	45.2
36	37	Providence, R. I	253,214	252,981	233	0.1	6.5
37	38	San Antonio, Tex	253,143	231,542	21,601	9.3	43.5
38	35	Akron, Ohio	243,130	255,040	−11,910	−4.7	22.4
39	39	Omaha, Nebr	223,185	214,006	9,179	4.3	11.7
40	41	Dayton, Ohio	211,456	200,982	10,474	5.2	31.7
41	40	Syracuse, N. Y	205,637	209,326	−3,689	−1.8	21.9
42	43	Oklahoma City, Okla	204,517	185,389	19,128	10.3	103.1
43	53	San Diego, Calif	202,038	147,995	54,043	36.5	99.0
44	42	Worcester, Mass	193,402	195,311	−1,909	−1.0	8.7
45	44	Richmond, Va	190,341	182,929	7,412	4.1	6.6
46	48	Ft. Worth, Tex	177,748	163,447	14,301	8.7	53.5
47	63	Jacksonville, Fla	174,336	129,549	44,787	34.6	41.5
48	78	Miami, Fla	170,877	110,637	60,240	54.4	274.1
49	45	Youngstown, Ohio	167,426	170,002	−2,576	−1.5	28.4
50	51	Nashville, Tenn	167,415	153,866	13,549	8.8	30.0
51	47	Hartford, Conn	166,329	164,072	2,257	1.4	18.9
52	46	Grand Rapids, Mich	164,061	168,592	−4,531	−2.7	22.5
53	57	Long Beach, Calif	163,441	142,032	21,409	15.1	155.5
54	49	New Haven, Conn	160,257	162,655	−2,398	−1.5	0.1
55	56	Des Moines, Iowa	159,155	142,559	16,596	11.6	12.7
56	50	Flint, Mich	151,275	156,492	−5,217	−3.3	70.8
57	59	Salt Lake City, Utah	150,019	140,267	9,752	7.0	18.8
58	52	Springfield, Mass	148,989	149,900	−911	−0.6	15.7
59	54	Bridgeport, Conn	146,900	146,716	184	0.1	2.2
60	62	Norfolk, Va	143,275	129,710	13,565	10.5	12.0
61	61	Yonkers, N. Y	142,404	134,646	7,758	5.8	34.4
62	58	Tulsa, Okla	141,750	141,258	492	0.3	96.0
63	55	Scranton, Pa	140,393	143,433	−3,040	−2.1	4.1
64	60	Paterson, N. J	139,651	138,513	1,138	0.8	1.9
65	64	Albany, N. Y	130,447	127,412	3,035	2.4	12.4
66	67	Chattanooga, Tenn	128,138	119,798	8,340	7.0	106.9
67	65	Trenton, N. J	124,685	123,356	1,329	1.1	3.4
68	70	Spokane, Wash	122,462	115,514	6,948	6.0	10.6
69	66	Kansas City, Kans	121,258	121,857	−599	−0.5	20.4
70	72	Ft. Wayne, Ind	118,193	114,946	3,247	2.8	32.8
71	68	Camden, N. J	117,777	118,700	−923	−0.8	2.1
72	69	Erie, Pa	116,247	115,967	280	0.2	24.2
73	71	Fall River, Mass	115,567	115,274	293	0.3	−4.3
74	77	Wichita, Kans	113,540	111,110	2,430	2.2	53.9
75	81	Knoxville, Tenn	112,002	105,802	6,200	5.9	36.0
76	80	Wilmington, Del	111,432	106,597	4,835	4.5	−3.2
77	74	Cambridge, Mass	111,120	113,643	−2,523	−2.2	3.6
78	92	Gary, Ind	110,863	100,426	10,437	10.4	81.3
79	76	Reading, Pa	110,704	111,171	−467	−0.4	3.1
80	75	New Bedford, Mass	110,296	112,597	−2,301	−2.0	−7.1
81	73	Elizabeth, N. J	109,396	114,589	−5,193	−4.5	19.6
82	83	Canton, Ohio	108,337	104,906	3,431	3.3	20.5
83	91	Tampa, Fla	107,674	101,161	6,513	6.4	96.0
84	79	Tacoma, Wash	107,520	106,817	703	0.7	10.2
85	96	Sacramento, Calif	105,530	93,750	11,780	12.6	42.2
86	82	Peoria, Ill	105,003	104,969	34	(1)	37.9
87	85	Somerville, Mass	102,304	103,908	−1,604	−1.5	11.6
88	84	South Bend, Ind	101,410	104,193	−2,783	−2.7	46.8
89	93	Lowell, Mass	101,331	100,234	1,097	1.1	−11.1
90	89	Utica, N. Y	100,534	101,740	−1,206	−1.2	8.1
91	103	Charlotte, N. C	100,327	82,675	17,652	21.4	78.4
92	90	Duluth, Minn	100,238	101,463	−1,225	−1.2	2.6

[1] Less than one-tenth of 1 percent.

COURT DECISION ON PUBLIC HEALTH

Milk sellers held liable in action for damages on account of contraction of undulant fever.—(Washington Supreme Court; *Nelson* v. *West Coast Dairy Co. et al.*, 105 P.2d 76; decided August 30, 1940.) An action was brought to recover damages alleged to have been sustained as the result of undulant fever contracted from drinking raw milk. The defendants were the operators of a dairy farm, a dairy company operating a dairy in the city of Everett, and a husband and wife who conducted a milk route in Everett. The milk produced on the said dairy farm was sold to the defendant dairy company, which company in turn sold a part of the milk to the defendants conducting the milk route. An ordinance of the city of Everett provided, among other things, that it should be unlawful to sell for human consumption any milk drawn from cows suffering from any disease, or milk containing pathogenic bacteria or disease-producing germs, or milk which was unwholesome or impure. The plaintiff's cause of action was predicated not only on allegations charging the defendants with violation of this ordinance but also on the common-law doctrine governing liability for negligence or breach of warranty in the sale of food unfit for immediate human consumption. The action was tried to the court sitting without a jury and resulted in findings in the plaintiff's favor against the dairy company and the milk-route operators. The action was dismissed as against the dairy farm operators because, while in the trial court's opinion the impurity of the milk produced by them was established by a preponderance of the evidence, the proof further showed that a part of the milk delivered to the plaintiff through the defendant dairy company and milk-route operators was from another source and was likewise infected. On appeal to the supreme court the judgment of the trial court in favor of the plaintiff was affirmed.

One contention made by the defendants was that the dismissal of the action as to the defendant dairy farm operators required dismissal as to the remaining defendants, but the appellate court concluded otherwise, saying: "Where articles of food are sold for domestic use and immediate consumption, the law implies a warranty that such articles are sound, wholesome, and fit to be consumed, and if the consumer is made sick through the consumption of such food, he has a right of action against the vendors thereof, either for breach of implied warranty, or for negligence; and in such action it is unnecessary either to allege or to prove scienter." Further, the court said that the consumer's right of recovery was not limited to an action against his own immediate vendor but reached the retailer, wholesaler, producer, and all others who participated in the sale and distribution of such deleterious articles of food.

Another of the defendants' contentions presented the question whether or not the trial court's findings as to the cause of the plaintiff's illness were based on speculation and conjecture, which question necessitated a review of the evidence. Following this review the court said that it was of the opinion that the trial court was fully warranted in finding that the most probable cause of plaintiff's illness was his consumption of infected raw milk furnished by the defendant dairy company and milk-route operators and that in arriving at that conclusion the court was not moved by, nor required to indulge in, conjecture or speculation.

DEATHS DURING WEEK ENDED OCTOBER 5, 1940

[From the Weekly Health Index, issued by the Bureau of the Census, Department of Commerce]

	Week ended Oct. 5, 1940	Corresponding week, 1939
Data from 88 large cities of the United States:		
Total deaths	7,776	7,363
Average for 3 prior years	7,698	
Total deaths, first 40 weeks of year	337,467	331,455
Deaths under 1 year of age	488	485
Average for 3 prior years	491	
Deaths under 1 year of age, first 40 weeks of year	20,065	20,066
Data from industrial insurance companies:		
Policies in force	64,812,208	66,619,938
Number of death claims	11,169	10,554
Death claims per 1,000 policies in force, annual rate	9.0	8.3
Death claims per 1,000 policies, first 40 weeks of year, annual rate	9.7	10.1

PREVALENCE OF DISEASE

No health department, State or local, can effectively prevent or control disease without knowledge of when, where, and under what conditions cases are occurring

UNITED STATES

REPORTS FROM STATES FOR WEEK ENDED OCTOBER 12, 1940

Summary

The decline in the incidence of poliomyelitis continued, though less sharply than in the preceding week. For the current period, the number of reported cases decreased from 555 to 516, or 7 percent, as compared with a drop in the preceding week from 711 to 555 cases, or a reduction of nearly 22 percent. The 5-year (1935–39) median for the current week is 306 cases. The largest numerical decreases occurred in the three areas—the two North Central and the South Atlantic—which have had the highest incidence. During the current week these areas reported 82 percent of the cases.

No unusual incidence was recorded for any of the other 8 communicable diseases included in the weekly table. The number of cases of influenza increased from 599 for the preceding week to 705 for the current week. The 5-year median expectancy is 649. For only influenza and poliomyelitis are the cumulative figures for the current year to date higher than the 5-year cumulative medians, while the incidence of only these two diseases and scarlet fever has been higher this year than last.

For the current week, 6 cases of Rocky Mountain spotted fever were reported (1 in Indiana and 5 (delayed reports) in Idaho), 4 cases of undulant fever (2 each in Connecticut and Mississippi), and 68 cases of endemic typhus fever (31 in Georgia and 11 in Texas).

The Bureau of the Census reports 7,764 deaths in 88 major cities of the United States for the current week, as compared with 7,776 for the preceding week, and with a 3-year (1937–39) average of 7,820 for the corresponding week.

Telegraphic morbidity reports from State health officers for the week ended October 12, 1940, and comparison with corresponding week of 1939 and 5-year median

In these tables a zero indicates a definite report, while leaders imply that, although none were reported, cases may have occurred.

Division and State	Diphtheria			Influenza			Measles			Meningitis, meningococcus		
	Week ended		Median, 1935–39	Week ended		Median, 1935–39	Week ended		Median, 1935–39	Week ended		Median, 1935–39
	Oct. 12, 1940	Oct. 14, 1939		Oct. 12, 1940	Oct. 14, 1939		Oct. 12, 1940	Oct. 14, 1939		Oct. 12, 1940	Oct. 14, 1939	
NEW ENG.												
Maine	2	2	1	----	----	1	24	2	8	0	0	0
New Hampshire	0	0	0	----	----	----	0	16	2	0	0	0
Vermont	0	1	1	----	----	----	5	6	5	0	0	0
Massachusetts	2	5	2	----	----	----	107	43	39	2	2	1
Rhode Island	0	0	0	----	----	----	0	7	4	0	0	0
Connecticut	1	1	2	1	----	----	3	9	9	0	1	1
MID. ATL.												
New York	12	16	21	[1]7	[1]2	[1]6	99	45	66	3	2	7
New Jersey	12	13	10	1	12	8	60	10	10	0	1	1
Pennsylvania	16	20	35	----	----	----	93	24	48	1	5	3
E. NO. CEN.												
Ohio	15	44	39	9	24	22	6	21	21	2	1	2
Indiana [2]	5	21	22	2	----	17	9	11	11	2	1	2
Illinois	12	23	35	3	2	6	61	19	13	0	1	3
Michigan [3]	10	15	15	12	9	2	113	18	21	0	2	2
Wisconsin	3	1	3	27	25	25	105	13	21	1	4	1
W. NO. CEN.												
Minnesota	4	3	5	2	2	1	4	8	8	0	0	0
Iowa	3	11	7	----	----	----	11	7	4	0	1	1
Missouri	6	14	32	----	----	34	2	5	14	0	0	1
North Dakota	3	0	2	1	----	----	4	2	2	0	0	0
South Dakota	2	2	1	----	1	----	2	32	1	1	0	0
Nebraska	1	1	3	2	----	----	16	1	1	0	0	0
Kansas	5	2	7	3	3	1	7	26	3	1	2	0
SO. ATL.												
Delaware	0	1	1	----	----	----	4	1	2	0	0	0
Maryland [3]	4	8	8	2	11	7	5	6	4	0	0	2
Dist. of Col.	2	6	6	----	----	----	2	0	1	0	0	1
Virginia [4]	31	62	62	45	58	----	22	5	8	2	1	1
West Virginia [3]	7	21	21	2	11	10	5	2	2	0	0	2
North Carolina [4]	71	141	124	----	----	3	4	32	32	0	0	1
South Carolina [4]	20	39	24	168	216	166	2	3	3	0	0	1
Georgia [4]	28	49	48	14	16	----	3	7	0	1	2	0
Florida [4]	3	8	10	----	1	1	1	2	2	0	1	1
E. SO. CEN.												
Kentucky	7	20	26	2	3	9	12	14	15	1	0	1
Tennessee [4]	8	34	48	6	7	19	15	6	2	1	1	3
Alabama [4]	29	30	43	13	23	23	2	5	4	2	2	2
Mississippi [3] [4]	11	18	18	----	----	----	----	----	0	0	0	0
W. SO. CEN.												
Arkansas	16	19	29	14	17	17	2	1	1	0	0	0
Louisiana [4]	14	17	17	----	2	5	5	0	2	1	0	0
Oklahoma	16	10	11	38	43	28	5	0	1	1	1	1
Texas [3] [4]	22	34	58	195	140	64	11	37	15	0	2	1
MOUNTAIN												
Montana	1	15	2	20	----	21	17	65	22	0	0	0
Idaho [3]	0	0	0	5	1	4	3	7	7	0	0	0
Wyoming	1	0	0	----	----	----	1	21	3	0	0	0
Colorado	3	10	10	13	6	----	9	4	6	0	0	0
New Mexico	0	0	3	----	----	----	9	1	3	1	0	0
Arizona	1	4	4	65	40	27	21	0	1	0	0	0
Utah [3]	2	1	0	2	----	----	3	7	6	0	0	0
PACIFIC												
Washington	0	0	0	----	----	----	2	250	18	0	0	0
Oregon	6	0	0	15	7	13	11	10	5	0	0	0
California	16	11	25	16	5	17	57	42	42	0	1	1
Total	433	753	931	705	687	649	964	853	853	23	34	49
41 weeks	11, 215	16, 191	19, 138	173, 317	155, 313	144, 016	234, 393	352, 687	352, 687	1, 321	1, 588	4, 605

See footnotes at end of table.

Telegraphic morbidity reports from State health officers for the week ended October 12, 1940, and comparison with corresponding week of 1939 and 5-year median—Con.

Division and State	Poliomyelitis			Scarlet fever			Smallpox			Typhoid and paratyphoid fever		
	Week ended		Median 1935–39	Week ended		Median, 1935–39	Week ended		Median, 1935–39	Week ended		Median, 1935–39
	Oct. 12, 1940	Oct. 14, 1939		Oct. 12, 1940	Oct. 14, 1939		Oct. 12, 1940	Oct. 14, 1939		Oct. 12, 1940	Oct. 14, 1939	
NEW ENG.												
Maine	0	1	1	0	2	8	0	0	0	2	2	2
New Hampshire	1	0	0	2	1	1	0	0	0	0	0	0
Vermont	1	5	0	7	7	7	0	0	0	0	0	0
Massachusetts	3	4	4	45	42	65	0	0	0	0	0	1
Rhode Island	1	0	0	2	3	9	0	0	0	0	0	0
Connecticut	0	4	4	10	18	20	0	0	0	0	4	1
MID. ATL.												
New York	8	61	20	107	124	139	0	0	0	14	20	20
New Jersey	2	9	9	38	48	46	0	0	0	5	3	4
Pennsylvania	13	34	7	85	161	165	0	0	0	14	20	27
E. NO. CEN.												
Ohio	38	6	6	93	171	210	0	0	0	7	8	21
Indiana [2]	31	5	4	33	59	94	2	2	2	4	6	6
Illinois	43	7	16	159	123	195	3	0	1	17	19	24
Michigan [3]	64	41	18	80	144	156	0	0	0	4	4	7
Wisconsin	25	9	7	89	74	90	0	1	1	0	1	1
W. NO. CEN.												
Minnesota	20	31	3	57	61	59	0	0	0	2	0	2
Iowa	75	12	5	24	56	56	1	0	2	2	2	6
Missouri	26	1	1	32	45	77	0	0	0	10	7	16
North Dakota	0	0	0	12	11	24	0	0	0	1	0	1
South Dakota	1	1	1	9	27	14	0	0	1	0	0	0
Nebraska	20	2	1	4	8	9	0	0	0	1	1	1
Kansas	24	2	2	62	51	61	1	0	0	2	8	4
SO. ATL.												
Delaware	0	0	0	2	7	7	0	0	0	0	0	1
Maryland [3]	0	3	2	27	30	30	0	0	0	5	4	12
Dist. of Col.	0	0	1	5	4	8	0	0	0	1	2	2
Virginia [4]	15	1	1	25	38	38	0	0	0	7	4	13
West Virginia [3]	37	2	1	31	68	68	0	0	0	5	5	12
North Carolina [4]	1	5	3	118	82	80	0	1	1	12	9	15
South Carolina [4]	0	11	0	54	20	10	0	0	0	5	10	11
Georgia [4]	1	1	2	42	45	31	0	0	0	11	8	8
Florida [4]	1	0	1	8	4	8	0	0	0	0	2	2
E. SO. CEN.												
Kentucky	6	13	4	55	62	62	0	0	0	15	14	20
Tennessee [4]	3	2	2	53	48	48	0	0	0	14	15	15
Alabama [4]	3	0	1	20	44	17	0	0	0	3	1	4
Mississippi [3 4]	2	0	2	8	19	19	0	0	0	1	4	5
W. SO. CEN.												
Arkansas	1	1	1	15	9	15	0	1	0	15	9	9
Louisiana [4]	3	0	1	7	14	11	0	0	0	8	8	8
Oklahoma	4	2	0	28	10	19	0	2	1	5	22	12
Texas [3 4]	4	8	2	32	31	37	1	0	0	17	27	27
MOUNTAIN												
Montana	3	0	0	12	24	24	1	0	4	1	3	3
Idaho [3]	2	4	0	13	11	17	0	0	0	10	0	3
Wyoming	0	2	0	4	5	5	0	0	0	1	1	0
Colorado	0	11	3	11	22	20	0	1	0	0	8	8
New Mexico	0	19	2	3	8	9	0	0	0	3	7	12
Arizona	2	7	0	4	4	5	0	0	0	1	2	3
Utah [3]	3	11	1	3	10	11	0	0	0	0	0	0
PACIFIC												
Washington	18	1	1	28	34	33	0	0	4	3	2	8
Oregon	1	5	2	7	10	25	1	0	0	2	1	1
California	10	30	25	89	82	123	0	3	1	6	18	13
Total	516	374	306	1,654	1,981	2,416	10	11	42	236	291	415
41 weeks	7,434	5,664	5,673	127,266	126,278	177,590	2,046	8,857	8,456	7,929	10,725	11,960

See footnotes at end of table.

Telegraphic morbidity reports from State health officers for the week ended October 12, 1940, and comparison with corresponding week of 1939 and 5-year median—Con.

Division and State	Whooping cough	
	Week ended	
	Oct. 12, 1940	Oct. 14, 1939
NEW ENG.		
Maine	5	78
New Hampshire	0	0
Vermont	4	19
Massachusetts	110	82
Rhode Island	3	5
Connecticut	65	69
MID. ATL.		
New York	281	234
New Jersey	78	87
Pennsylvania	381	202
E. NO. CEN.		
Ohio	206	234
Indiana [2]	12	54
Illinois	139	179
Michigan [3]	348	111
Wisconsin	95	139
W. NO. CEN.		
Minnesota	36	67
Iowa	11	12
Missouri	26	10
North Dakota	23	6
South Dakota	2	5
Nebraska	2	1
Kansas	30	7
SO. ATL.		
Delaware	14	3
Maryland [3]	51	23
Dist. of Col.	4	26
Virginia [4]	40	20
West Virginia [3]	25	17
North Carolina [4]	65	55
South Carolina [4]	12	19
Georgia [4]	8	9
Florida [4]	9	2
E. SO. CENT.		
Kentucky	37	45
Tennessee [4]	32	28
Alabama [4]	12	19
Mississippi [3 4]	----------	----------
W. SO. CENT.		
Arkansas	29	18
Louisiana [4]	2	52
Oklahoma	15	2
Texas [3 4]	90	36
MOUNTAIN		
Montana	0	8
Idaho [2]	1	3
Wyoming	2	0
Colorado	19	10
New Mexico	4	20
Arizona	2	7
Utah [3]	8	58
PACIFIC		
Washington	12	11
Oregon	2	16
California	248	83
Total	2,600	2,191
41 weeks	128,172	145,873

[1] New York City only.

[2] Rocky Mountain spotted fever, week ended October 12, 1940, 6 cases as follows: Indiana, 1; Idaho (delayed report), 5.

[3] Period ended earlier than Saturday.

[4] Typhus fever, week ended Oct. 12, 1940, 68 cases as follows: Virginia, 1; North Carolina, 2; South Carolina, 6; Georgia, 31; Florida, 1; Tennessee, 3; Alabama, 5; Mississippi, 1; Louisiana, 7; Texas, 11.

VENEREAL DISEASES

New Cases Reported for July 1940 [1]

Reports from States

	Syphilis									Gonorrhea		Other venereal diseases	
	Early			Late		Congenital		All syphilis [2]					
	Primary and secondary	Early-latent [3]	Rate per 10,000 population	Includes late-latent	Rate per 10,000 population	Number	Rate per 10,000 population	Number	Rate per 10,000 population	Number	Rate per 10,000 population	Number	Rate per 10,000 population
Alabama	289	310	2.05	286	0.98	74	0.25	1,467	5.01	510	1.74	16	0.05
Alaska [4]													
Arizona	23	10	.79	37	.89	8	.19	81	1.94	147	3.52	6	.14
Arkansas	250	284	2.57	402	1.94	30	.14	1,119	5.39	203	.98	11	.05
California	34	374	.65	1,241	1.98	80	.13	1,853	2.96	1,863	2.98	35	.06
Colorado	131		1.22	327	3.04	50	.46	508	4.72	140	1.30	2	.02
Connecticut	17	11	.16	77	.44	8	.05	146	.83	112	.64		
Delaware	9	25	1.29	25	.95	2	.08	156	5.93	61	2.32	1	.04
District of Columbia								572	8.99	353	5.55	3	.05
Florida	240	369	3.58	718	4.23	45	.26	1,400	8.24	111	.65	15	.09
Georgia		1,271	4.08	645	2.07			1,916	6.15	102	.33	4	.01
Hawaii	4	1	.12	37	.91	5	.12	64	1.58	74	1.83		
Idaho	4		.08	11	.22	2	.04	18	.36	10	.20		
Illinois	130	356	.61	1,372	1.73	75	.09	1,933	2.44	1,674	2.11	26	.03
Indiana	93	58	.43	236	.68	28	.08	528	1.51	154	.44	1	.003
Iowa	50	68	.46	119	.46	6	.02	256	1.00	176	.69		
Kansas	63	49	.60	77	.41	14	.08	261	1.40	120	.64		
Kentucky	64	35	.33	204	.69	7	.02	469	1.58	261	.88	1	.003
Louisiana	447	3	2.10	3	.01	2	.01	938	4.37	103	.48	12	.06
Maine	17		.20	25	.29	9	.10	52	.60	28	.33		
Maryland	93	28	.72	199	1.18	21	.12	825	4.90	261	1.55	20	.12
Massachusetts	48		.11	354	.80	22	.05	424	.96	335	.76		
Michigan	113	114	.47	481	.99	43	.09	862	1.77	703	1.44	30	.06
Minnesota	19	17	.13	169	.63	7	.03	217	.81	181	.68	1	.004
Mississippi	260	801	5.20	831	4.07	116	.57	5,296	25.96	2,701	13.24	3	.01
Missouri	141	365	1.26	234	.58	27	.07	801	1.99	289	.72	5	.01
Montana	10	1	.20	27	.49	2	.04	45	.82	26	.48		
Nebraska	14	7	.15	52	.38	2	.01	75	.55	47	.34		
Nevada	2	6	.78	10	.98	1	.10	19	1.86	21	2.06	1	.10
New Hampshire		1	.02	3	.06	3	.06	12	.23	7	.14		
New Jersey	92	155	.57	450	1.03	51	.12	758	1.74	246	.56	45	.10
New Mexico	9	10	.45	95	2.25	11	.26	125	2.96	46	1.09	3	.07
New York	124	259	.29	2,067	1.59	119	.09	2,759	2.12	1,209	.93	34	.03
North Carolina	230	902	3.21	692	1.96	126	.36	1,951	5.53	555	1.57	57	.16
North Dakota	7	5	.17	9	.13	8	.11	45	.63	28	.39		
Ohio	232	262	.73	765	1.13	67	.10	1,326	1.96	176	.26	4	.01
Oklahoma	87	99	.72	182	.71	26	.10	602	2.34	334	1.30		
Oregon	19	22	.39	64	.62	3	.03	110	1.06	124	1.19		
Pennsylvania	178	434	.60	594	.58	60	.06	1,266	1.24				
Rhode Island	14	1	.22	71	1.04	5	.07	91	1.33	37	.54		
South Carolina	617	369	5.21	737	3.90	27	.14	1,774	9.38	112	.59	13	.07
South Dakota	14	37	.74	14	.20	2	.03	69	1.00	25	.36		
Tennessee	260	473	2.51	688	2.35	41	.14	1,469	5.02	351	1.20	15	.05
Texas	302	463	1.23	790	1.27	112	.18	1,874	3.01	881	1.41	39	.06
Utah	11	6	.33	55	1.05	2	.04	77	1.48	37	.71		
Vermont	2	5	.18	3	.08	2	.05	12	.31	20	.52		
Virginia	351	324	2.46	693	2.53	62	.23	1,534	5.59	331	1.21		
Washington	36	36	.43	79	.47	9	.05	178	1.06	235	1.40	4	.02
West Virginia	84	49	.70	85	.45	15	.08	511	2.69	220	1.16		
Wisconsin	40		.14	76	.26	5	.02	121	.41	87	.30		
Wyoming	16	5	.89	23	.97	3	.13	54	2.28	34	1.43	2	.08
Puerto Rico [4]													
Virgin Islands [4]													
Total	5,290	8,480	1.06	16,434	1.26	1,445	.11	39,019	2.99	15,861	1.32	409	.04

See footnotes at end of table.

VENEREAL DISEASES—Continued

New Cases Reported for July 1940—Continued

Reports from cities of 200,000 population or over

	Syphilis									Gonorrhea		Other venereal diseases	
	Early			Late		Congenial		All syphilis [2]					
	Primary and secondary	Early-latent [3]	Rate per 10,000 population	Includes late-latent	Rate per 10,000 population	Number	Rate per 10,000 population	Number	Rate per 10,000 population	Number	Rate per 10,000 population	Number	Rate per 10,000 population
Akron	7	9	0.58	31	1.13	4	0.15	51	1.85	32	1.16	1	0.04
Atlanta		273	9.09	24	.80			397	13.22	14	.47	4	.13
Baltimore	75	14	1.07	149	1.78	7	.08	489	5.85	145	1.74	19	.23
Birmingham	74	62	4.62	59	2.00	13	.44	390	13.25	54	1.83	3	.10
Boston	18		.23	102	1.28	4	.05	138	1.74	113	1.42		
Buffalo	6	3	.15	87	1.45	5	.08	101	1.68	66	1.10		
Chicago	92	201	.80	820	2.24	45	.12	1,158	3.16	1,142	3.12	25	.07
Cincinnati [4]													
Cleveland	48	53	1.07	144	1.52	11	.12	256	2.71	173	1.83	6	.06
Columbus	17	15	1.02	57	1.82	4	.13	78	2.49	25	.80		
Dallas [4]													
Dayton	13	12	1.13	35	1.58	2	.09	63	2.84	32	1.44	2	.09
Denver								190	6.31	84	2.79		
Detroit	38	56	.52	236	1.30	11	.06	341	1.88	336	1.85	23	.13
Houston	52	64	3.24	177	4.94	27	.75	391	10.91	192	5.36	7	.20
Indianapolis	14	5	.49	17	.44	2	.05	96	2.49	35	.91		
Jersey City	7	8	.46	27	.83	3	.09	45	1.39	7	.22	1	.03
Kansas City [4]													
Los Angeles		93	.61	361	2.37	16	.11	470	3.09	408	2.68	6	.04
Louisville	10	6	.47	78	2.30	3	.09	150	4.43	155	4.57		
Memphis [4]													
Milwaukee	14		.22	32	.51	2	.03	48	.76	12	.19	12	.19
Minneapolis	12	8	.40	45	.90			65	1.30	53	1.06	1	.02
Newark	38	7	.99	170	3.74	12	.26	227	5.00	86	1.89	2	.04
New Orleans [4]													
New York	149	257	.54	1,426	1.90	79	.11	2,081	2.78	1,101	1.47	55	.07
Oakland	2	9	.35	43	1.37	1	.03	55	1.76	44	1.41	1	.03
Omaha	6	2	.36	6	.27	1	.04	15	.67	6	.27		
Philadelphia	63	178	1.20	312	1.56	20	1.10	573	2.86	42	.21		
Pittsburgh								494	7.01	28	.40		
Portland	8	14	.69	42	1.31	2	.06	66	2.06	69	2.15		
Providence	2		.08	47	1.81	1	.04	50	1.93	25	.96		
Rochester	2		.06	28	.82			30	.88	32	.94		
St. Louis	34	182	2.56	326	3.87	17	.20	559	6.63	210	2.49	9	.11
St. Paul	1	2	.10	20	.70	2	.07	26	.90	14	.49		
San Antonio	4	45	1.87	102	3.90	18	.69	196	7.49	97	3.71	1	.04
San Francisco	45	2	.68	143	2.08	4	.06	194	2.82	216	3.13	7	.10
Seattle	22	20	1.08	60	1.55	5	.13	113	2.92	169	4.37	3	.08
Syracuse				68	3.02	6	.27	74	3.28	8	.35		
Toledo	4	6	.32	35	1.13	2	.06	47	1.51	30	.96		
Washington								569	8.95	353	5.55	3	.05
Total	977	1,606	.91	5,309	1.86	329	.12	10,286	3.41	5,608	1.86	191	.08

[1] Figures preliminary and subject to correction.
[2] Includes "not stated" diagnosis.
[3] Duration of infection under 4 years.
[4] No report for current month.

WEEKLY REPORTS FROM CITIES

City reports for week ended September 28, 1940

This table summarizes the reports received weekly from a selected list of 140 cities for the purpose of showing a cross section of the current urban incidence of the communicable diseases listed in the table.

State and city	Diphtheria cases	Influenza		Measles cases	Pneumonia deaths	Scarlet fever cases	Smallpox cases	Tuberculosis deaths	Typhoid fever cases	Whooping cough cases	Deaths, all causes
		Cases	Deaths								
Data for 90 cities:											
5-year average	134	52	16	162	336	448	2	324	67	966	------
Current week [1]	45	39	11	229	243	337	0	313	40	1,003	------
Maine:											
Portland	0	------	0	0	1	0	0	0	0	5	15
New Hampshire:											
Concord	0	------	0	0	0	1	0	0	0	0	8
Manchester	0	------	0	0	2	5	0	1	0	0	10
Nashua	0	------	0	0	0	0	0	0	0	0	6
Vermont:											
Barre	0	------	0	0	0	0	0	1	0	0	2
Burlington	0	------	0	0	0	0	0	0	0	0	9
Rutland	0	------	0	0	0	0	0	0	0	0	4
Massachusetts:											
Boston	0	------	0	15	8	5	0	9	0	64	207
Fall River	0	------	0	1	2	0	0	3	0	3	27
Springfield	0	------	0	0	1	2	0	1	0	0	24
Worcester	0	------	0	23	4	0	0	0	0	1	43
Rhode Island:											
Pawtucket	0	------	0	0	0	0	0	0	0	0	21
Providence	0	------	0	0	1	1	0	2	0	2	46
Connecticut:											
Bridgeport	0	------	0	0	0	0	0	0	0	1	31
Hartford	0	------	0	0	3	1	0	1	0	4	36
New Haven	0	------	0	0	0	2	0	0	0	9	43
New York:											
Buffalo	0	------	0	1	3	3	0	7	0	9	121
New York	11	8	2	34	48	29	0	53	5	117	1,345
Rochester	0	------	0	1	1	1	0	2	1	8	63
Syracuse	0	------	0	0	1	1	0	1	0	7	43
New Jersey:											
Camden	0	------	0	7	0	3	0	0	0	2	24
Newark	0	------	0	12	3	5	0	7	0	27	92
Trenton	0	------	0	0	2	2	0	1	1	1	30
Pennsylvania:											
Philadelphia	0	3	1	41	5	24	0	20	2	57	408
Pittsburgh	1	2	1	2	10	8	0	3	2	23	150
Reading	0	------	0	2	0	0	0	3	1	16	15
Scranton	0	------	------	0	------	2	0	------	0	0	------
Ohio:											
Cincinnati	1	------	0	0	5	10	0	2	0	15	104
Cleveland	0	6	1	1	5	7	0	5	1	48	156
Columbus	0	------	0	0	0	2	0	2	1	5	82
Toledo	0	------	0	2	4	6	0	3	1	9	69
Indiana:											
Anderson	0	------	0	0	0	0	0	0	0	0	12
Fort Wayne	0	------	------	0	------	0	0	------	0	0	------
Indianapolis	0	------	0	1	2	6	0	7	0	10	92
Muncie	0	------	0	0	1	0	0	1	0	0	16
South Bend	0	------	0	0	2	0	0	0	0	0	11
Terre Haute	0	------	0	0	1	0	0	0	0	0	13
Illinois:											
Alton	0	------	0	0	0	4	0	1	0	2	16
Chicago	4	1	1	15	19	49	0	23	3	73	592
Elgin	0	------	0	1	0	0	0	0	0	1	9
Springfield	0	------	0	0	0	3	0	0	0	2	20
Michigan:											
Detroit	4	------	0	20	6	32	0	16	0	147	204
Flint	0	------	0	0	5	2	0	0	0	4	34
Grand Rapids	0	------	0	0	0	1	0	0	0	32	27
Wisconsin:											
Kenosha	0	------	0	0	0	1	0	0	0	0	8
Madison	0	------	0	4	0	2	0	0	0	3	12
Milwaukee	0	------	0	28	2	14	0	3	0	8	101
Racine	1	------	0	0	0	1	0	1	0	2	16
Superior	0	------	0	0	0	3	0	0	0	1	9
Minnesota:											
Duluth	0	------	0	0	0	1	0	0	0	0	21
Minneapolis	1	------	0	1	5	12	0	1	1	16	101
St. Paul	0	------	0	0	6	3	0	1	0	10	47

[1] Figures for Raleigh, Winston-Salem, and Boise estimated; reports not received.

City reports for week ended September 28, 1940—Continued

State and city	Diphtheria cases	Influenza		Measles cases	Pneumonia deaths	Scarlet fever cases	Smallpox cases	Tuberculosis deaths	Typhoid fever cases	Whooping cough cases	Deaths, all causes
		Cases	Deaths								
Iowa:											
Cedar Rapids	0	------	--------	0	------	2	0	------	0	0	--------
Davenport	0	------	--------	0	------	0	0	------	0	0	--------
Des Moines	1	------	0	0	0	9	0	0	2	1	30
Sioux City	0	------	--------	0	------	0	0	------	0	0	--------
Waterloo	0	------	--------	0	------	0	0	------	1	1	--------
Missouri:											
Kansas City	1	------	0	0	1	1	0	3	0	5	65
St. Joseph	0	------	0	0	2	0	0	1	0	1	16
St. Louis	1	------	0	1	9	9	0	8	3	13	210
North Dakota:											
Fargo	0	------	0	0	1	0	0	0	0	1	5
Grand Forks	0	------	--------	0	------	0	0	------	0	1	--------
Minot	0	------	0	0	0	0	0	0	0	0	8
South Dakota:											
Aberdeen	0	------	--------	0	------	0	0	------	0	2	--------
Nebraska:											
Lincoln	0	------	--------	1	------	0	0	------	0	3	--------
Omaha	0	------	0	1	2	2	0	1	0	1	41
Kansas:											
Lawrence	0	------	0	0	0	0	0	0	0	0	2
Topeka	1	------	0	0	0	6	0	1	0	0	12
Wichita	0	------	0	0	0	3	0	0	0	4	17
Delaware:											
Wilmington	0	------	0	0	3	0	0	1	0	6	24
Maryland:											
Baltimore	0	------	0	0	7	8	0	13	1	62	175
Cumberland	0	1	0	0	0	0	0	0	0	0	17
Frederick	0	------	0	0	1	0	0	0	0	0	6
Dist. of Col.:											
Washington	2	------	0	2	6	11	0	15	1	2	159
Virginia:											
Lynchburg	2	------	0	0	1	1	0	0	0	0	15
Norfolk	0	------	0	0	1	1	0	0	3	0	23
Richmond	0	------	0	1	2	4	0	3	0	2	58
Roanoke	0	------	0	0	1	2	0	0	0	5	19
West Virginia:											
Charleston	0	------	0	0	2	0	0	1	0	0	30
Huntington	2	------	--------	0	------	1	0	------	0	0	--------
Wheeling	0	------	0	0	1	0	0	1	0	0	24
North Carolina:											
Gastonia	0	------	--------	0	------	0	0	------	0	1	--------
Raleigh	------	------	--------	------	------	------	------	------	------	------	--------
Wilmington	0	------	0	0	0	1	0	0	0	0	12
Winston-Salem	------	------	--------	------	------	------	------	------	------	------	--------
South Carolina:											
Charleston	0	1	0	0	0	1	0	0	1	2	23
Florence	0	------	0	0	1	0	0	0	0	0	10
Greenville	0	------	0	0	0	0	0	0	0	1	4
Georgia:											
Atlanta	0	5	0	1	2	4	0	6	1	0	61
Brunswick	0	------	0	0	0	0	0	0	0	0	5
Savannah	0	4	1	0	0	0	0	1	0	0	25
Florida:											
Miami	1	4	0	0	3	0	0	2	0	0	27
Tampa	0	1	1	0	1	0	0	1	0	0	25
Kentucky:											
Ashland	0	------	0	0	0	0	0	0	1	0	7
Covington	0	------	0	0	1	9	0	0	0	0	13
Lexington	0	------	0	1	0	0	0	1	0	6	13
Louisville	1	------	0	0	2	7	0	4	0	8	82
Tennessee:											
Knoxville	1	------	0	0	0	1	0	3	0	1	21
Memphis	0	------	0	0	2	2	0	3	1	8	88
Nashville	0	------	0	0	3	2	0	1	0	5	47
Alabama:											
Birmingham	3	------	1	0	2	3	0	3	2	2	64
Mobile	0	------	0	0	0	1	0	3	0	0	31
Montgomery	0	------	--------	1	------	2	0	------	0	0	--------
Arkansas:											
Fort Smith	0	------	--------	0	------	0	0	------	0	0	--------
Little Rock	0	------	1	0	2	0	0	7	0	1	--------
Louisiana:											
New Orleans	0	------	0	1	8	1	0	9	5	2	112
Shreveport	1	------	0	0	4	0	0	1	4	1	50
Oklahoma:											
Oklahoma City	0	------	0	1	3	2	0	0	0	0	20
Tulsa	0	------	0	0	0	2	0	0	0	0	20

City reports for week ended September 28, 1940—Continued

State and city	Diphtheria cases	Influenza cases	Influenza deaths	Measles cases	Pneumonia deaths	Scarlet fever cases	Smallpox cases	Tuberculosis deaths	Typhoid fever cases	Whooping cough cases	Deaths, all causes
Texas:											
Dallas	3	------	0	0	0	1	0	4	1	5	46
Fort Worth	0	------	0	1	1	2	0	2	0	2	44
Galveston	0	------	0	0	0	0	0	1	0	0	15
Houston	2	------	0	1	2	3	0	4	0	0	70
San Antonio	1	------	0	0	2	1	0	6	1	1	52
Montana:											
Billings	0	------	0	2	1	3	0	0	0	0	8
Great Falls	0	------	0	0	1	1	0	0	0	2	4
Helena	0	------	0	0	0	3	0	0	0	0	2
Missoula	0	------	0	0	1	1	0	0	0	0	--------
Idaho:											
Boise	--------	------	--------	--------	--------	--------	--------	--------	--------	--------	--------
Colorado:											
Colorado Springs	0	------	0	0	0	0	0	0	0	2	4
Denver	0	------	0	2	4	3	0	5	0	4	64
Pueblo	0	------	0	0	0	2	0	1	0	0	6
New Mexico:											
Albuquerque	0	------	0	0	1	0	0	1	0	0	18
Utah:											
Salt Lake City	0	------	0	2	0	1	0	0	0	9	34
Washington:											
Seattle	3	------	1	1	3	3	0	5	0	9	86
Spokane	0	------	0	0	0	0	0	0	0	0	31
Tacoma	0	------	0	0	1	0	0	1	0	0	30
Oregon:											
Portland	0	2	0	0	2	5	0	0	0	5	71
Salem	0	------	--------	0	--------	0	0	--------	0	0	--------
California:											
Los Angeles	2	7	0	2	5	12	0	15	0	60	323
Sacramento	0	------	0	0	4	3	0	5	1	0	29
San Francisco	0	------	0	7	4	2	0	6	0	47	159

State and city	Meningitis, meningococcus cases	Meningitis, meningococcus deaths	Poliomyelitis cases
Massachusetts:			
Springfield	0	0	1
Worcester	0	0	1
Rhode Island:			
Pawtucket	1	1	0
New York:			
Buffalo	2	0	3
New York	1	0	12
Pennsylvania:			
Philadelphia	0	0	5
Pittsburgh	0	0	1
Ohio:			
Cincinnati	0	0	5
Cleveland	0	0	5
Columbus	0	0	1
Indiana:			
Fort Wayne	0	0	5
Indianapolis	0	0	1
Muncie	0	0	2
South Bend	0	0	1
Illinois:			
Chicago	0	0	21
Michigan:			
Detroit	0	0	4
Flint	1	0	0
Grand Rapids	0	0	6
Wisconsin:			
Madison	0	0	3
Milwaukee	0	0	2
Superior	0	0	1
Minnesota:			
Minneapolis	0	0	1
St. Paul	0	0	2
Iowa:			
Davenport	0	0	2
Des Moines	0	0	7
Iowa—Continued:			
Sioux City	0	0	4
Waterloo	0	0	3
Missouri:			
Kansas City	0	0	5
St. Joseph	0	0	5
St. Louis	0	0	1
Nebraska:			
Omaha	0	0	1
Kansas:			
Topeka	0	0	5
Wichita	0	0	1
Maryland:			
Baltimore	1	0	0
Virginia:			
Lynchburg	0	0	1
Richmond	0	1	2
Roanoke	0	0	1
West Virginia:			
Charleston	1	0	1
Arkansas:			
Little Rock	0	0	1
Louisiana:			
New Orleans	0	0	2
Texas:			
Dallas	0	0	1
Houston	0	0	2
Montana:			
Billings	0	0	1
Washington:			
Seattle	0	0	3
Tacoma	0	0	1
California:			
Los Angeles	1	0	4
San Francisco	0	0	1

Encephalitis, epidemic or lethargic.—Cases: New York, 1; Grand Rapids, 1; Sacramento, 1.
Pellagra cases.—Charleston, S. C., 3; Savannah, 3; Montgomery, 1; Fort Smith, 1.
Typhus fever.—Cases: Charleston, S. C., 1; Savannah, 1; Miami, 1; Birmingham, 1; Dallas, 3; Houston, 6. Deaths: Little Rock, 1.

FOREIGN REPORTS

CANADA

Provinces—Communicable diseases—Week ended August 31, 1940.—During the week ended August 31, 1940, cases of certain communicable diseases were reported by the Department of Pensions and National Health of Canada as follows:

Disease	Prince Edward Island	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	British Columbia	Total
Cerebrospinal meningitis					3			1		4
Chickenpox		2		47	25	7	40		9	130
Diphtheria			1	14	3	3	4	4		29
Influenza		11			4				3	18
Lethargic encephalitis					1					1
Measles	6		1	9	65	11	18	1	11	122
Mumps			1		51		4	2		58
Pneumonia		1			6				9	16
Poliomyelitis				5	1		1			7
Scarlet fever		3	2	81	62	8	6	11	12	185
Tuberculosis	1	7	6	61	64	3		1		143
Typhoid and paratyphoid fever		3	3	14	8	1	1	1	3	34
Whooping cough		1	14	141	57	20	26	2	11	272

NEWFOUNDLAND AND LABRADOR

Vital statistics—Year 1938.—Following are vital statistics for Newfoundland and Labrador for the year 1938:

	Number	Rate per 1,000 population		Number	Rate per 1,000 population
Population	296,092		Deaths from—Continued.		
Marriages	2,172	7.3	Influenza	33	
Births	7,343	24.8	Measles	23	
Deaths	3,586	12.1	Nephritis	96	
Deaths under 1 year of age	681	[1] 92.8	Pneumonia (all forms)	219	
Deaths from:			Puerperal causes	45	[1] 6.1
Appendicitis	11		Scarlet fever	6	
Cancer	218	.838	Senility	395	
Cerebrospinal meningitis	50		Syphilis	13	
Cirrhosis of the liver	8		Tuberculosis (all forms)	597	1.98
Diphtheria	5		Typhoid fever	11	
Gastroenteritis	168		Violence	145	

[1] Per 1,000 live births.

YUGOSLAVIA

Notifiable diseases—4 weeks ended August 11, 1940.—During the 4 weeks ended August 11, 1940, certain notifiable diseases were reported in Yugoslavia as follows:

Disease	Cases	Deaths	Disease	Cases	Deaths
Anthrax	48	10	Paratyphoid fever	42	----
Cerebrospinal meningitis	80	29	Poliomyelitis	8	1
Diphtheria and croup	400	22	Scarlet fever	155	8
Dysentery	115	6	Sepsis	6	6
Erysipelas	111	3	Tetanus	53	13
Favus	5	----	Typhoid fever	284	24
Lethargic encephalitis	7	1	Typhus fever	32	1

REPORTS OF CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER RECEIVED DURING THE CURRENT WEEK

NOTE.—A cumulative table giving current information regarding the world prevalence of quarantinable diseases appeared in the PUBLIC HEALTH REPORTS of September 27, 1940, pages 1796–1799. A similar table will appear in future issues of the PUBLIC HEALTH REPORTS for the last Friday of each month.

Cholera

China.—During the week ended September 28, 1940, cholera was reported in China as follows: Hong Kong, 68 cases; Macao, 70 cases; Shanghai, 16 cases.

×